

North Idaho Interagency Fire Danger Operating Plan

*USDA Forest Service
State of Idaho, Department of Lands
Coeur d'Alene Tribe
Bureau of Land Management*



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North Idaho Interagency Fire Danger Operating Plan

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I. INTRODUCTION

This North Idaho Interagency Fire Danger Operating Plan (FDOP) guides fire management decisions made by agency administrators, fire managers, dispatchers, and firefighters. It establishes interagency planning and response levels using the best available scientific methods and historical fire occurrence and weather data, outlines procedures for developing seasonal risk analysis, and defines fire severity trigger points.

An appropriate level of preparedness to meet fire management objectives is based on an assessment of vegetation, climate, and topography using National Fire Danger Rating System (NFDRS) modeling. This document is the Fire Danger Operating and Plan for the four primary wildland fire management agencies (USDA Forest Service, Bureau of Land Management, Idaho Department of Lands and Coeur d'Alene Tribe) in North Idaho.

Guidance and policy used to develop this Fire Danger Operating and Preparedness Plan can be found in the [Interagency Standards for Fire & Aviation Operations](#) (*Red Book*), [Wildland Fire and Aviation Program and Management and Operations Guide](#) (*Blue Book*), and [Forest Service Manual 5120](#).

The objectives of the FDOP are to:

- Provide tools for agency administrators, fire managers, dispatchers, agency cooperators, and firefighters to correlate fire danger ratings with appropriate fire business decisions in North Idaho.
- Delineate fire danger rating areas (FDRAs) in North Idaho having similar climate, fuels, and topography.
- Establish a fire weather-monitoring network consisting of remote automated weather stations (RAWS) which comply with the *NWCG NFDRS Weather Station Standards* (PMS 426-3).
- Determine fire business and adjective fire danger rating break points using the Weather Information Management System (WIMS), National Fire Danger Rating System (NFDRS), FireFamily Plus software, and by analyzing historical weather and fire occurrence data.
- Define roles and responsibilities for those making fire preparedness decisions, managing weather information, and briefing fire suppression personnel regarding current and potential fire danger.
- Describe how potential fire danger ratings are applied for communication by and to agency administrators, fire managers, cooperating agencies, industry, and the public.
- Identify seasonal risk analysis criteria and establish general fire severity thresholds.
- Develop and distribute fire danger Pocket Cards to all personnel involved with fire suppression activities within the North Idaho fire danger rating areas
- Identify program needs and suggest improvements for the Fire Danger Operating Plan.

II. ROLES AND RESPONSIBILITIES

A. NFDRS Committee

The NFDRS Committee is composed of the USDA Forest Service North Zone Fire Management Officer, the St. Joe District Assistant Fire Management Officer, the USDA Forest Service District Fuels Specialists, the Idaho Department of Lands Fire and Fuels Program Manager, the BLM District Fire Use Specialist and the Coeur d'Alene Dispatch Center Manager.

Responsibilities include:

- Creating, reviewing and updating the fire danger pocket cards
- Meeting annually to review and correct weather and fire occurrence data
- Reviewing the Fire Danger Operating Plan annually and recommending updates
- Preparing the Preparedness Plan and Staffing Plan for review.

B. Coeur d'Alene Dispatch Center (CDC)

Responsibilities include:

- Day to day operations and monitoring of the weather information management system (WIMS)
- Processing weather information in WIMS to generate fire danger indices during the fire season communicated by radio and posted to the Coeur d'Alene Interagency Dispatch website.
- Ensuring proper editing of the RAWS station catalogs for the eight RAWS station in the Idaho Panhandle National Forest
- Updating NFDRS values (green-up and freeze dates) for RAWS stations
- Ensuring quality control of the eight RAWS station inputs
- Publishing the 1300 daily weather observations for the eight RAWS stations in the Idaho Panhandle National Forest
- Providing oversight to the fire occurrence data entered through federal fire reports
- Overseeing contract for maintenance of RAWS stations

C. Grangeville Interagency Dispatch Center

Responsibilities include:

- Ensuring proper editing of the RAWS station catalogs for the two RAWS stations in the Clearwater National Forest (Shock and Potlatch)
- Publishing the 1300 daily weather observations from the Shock and Potlatch Stations
- Updating NFDRS values (green-up and freeze dates) for the RAWS stations in the Clearwater National Forest

D. Forest Technology Systems (FTS)

Responsibilities include:

- Maintaining and calibrating the RAWS stations according to the terms of the

contract with the Idaho Panhandle National Forest

E. National Weather Service Spokane Fire Weather Forecast Office

Responsibilities include:

- Preparing daily weather forecasts and coordinating with CDC on weather data.
- Entering forecasted changes to weather inputs for each RAWS station

F. Fire Managers/Duty Officer

Responsibilities include:

- Ensuring the daily morning briefing is conducted
- Ensuring that all firefighters are aware of the fire weather forecast, the previous day's wildland fire activity, the preparedness level, safety items (including "6 Minutes For Safety" discussions), and the ERC/BI influence on fire behavior

G. Deputy Forest FMO

Responsibilities include:

- Conducting the yearly review of FDOP and implementation plans
- Coordinating with interagency partners
- Obtaining signatures and review of revisions to FDOP
- Distributing current FDOP

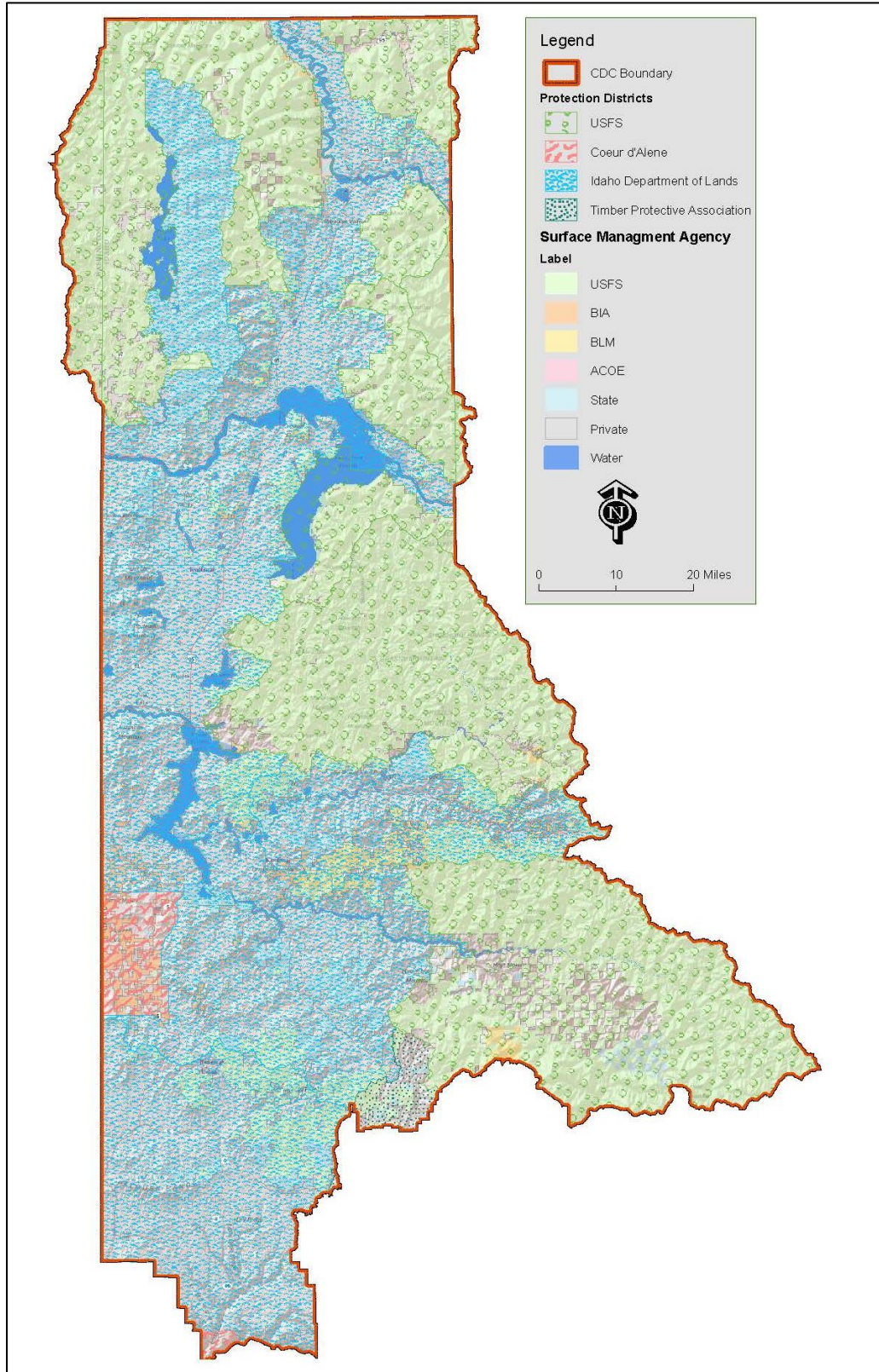
III. FIRE DANGER PLANNING AREA INVENTORY

A. The Administrative Units

The North Idaho Fire Danger Planning Area (Planning Area) corresponds to the Coeur d'Alene Interagency Dispatch Area. It is often referred to as the Idaho Panhandle. The western and eastern edges generally follow the borders with Washington and Montana, but include sections of the Idaho Panhandle National Forest in Pend Oreille County, Washington, and Lincoln County, Montana. The northern edge is the Canadian Border. Finally, the southern boundary follows the southernmost boundaries of the St. Joe Geographic Area (Ranger District) of the Idaho Panhandle National Forest (IPNF), the West St. Joe Forest Protective District, and the Ponderosa Forest Protective District, the latter two being managed by the Idaho Department of Lands (IDL). Jurisdictional boundaries are illustrated in Appendix G. The total area encompassed is approximately 4.7 million acres.

The North Idaho Interagency Dispatch Area includes the entire Idaho Panhandle National Forest, BLM lands within the dispatch area, state and private lands, and the Coeur d'Alene Tribal lands. Wildland fire protection is provided by the US Forest Service, the Idaho Department of Lands, Coeur d'Alene Tribe, and Clearwater-Potlatch Timber Protective Association. Primarily private lands are protected by the Timber Protective Association that straddles the southern boundary of the area. The fire protection boundaries are illustrated in Figure 1.

Figure 1. Fire Protection Boundaries



B. Fire Problem Identification and Fire History

The majority of wildfires in the Idaho Panhandle are started by lightning. In the pre-settlement era, these lightning fires, burning under varying weather conditions in the summer months, created a patchwork of fuel loadings and vegetation across the landscape. Today, most lightning fires in the planning area (96 percent) are less than one acre, and are suppressed during initial attack soon after detection. In the absence of fire, tree mortality has been accelerated by insects, disease, and changes in climate. Dead and down fuel loadings have increased throughout the area.

The 2015 Land Management Plan (LMP), or Forest Plan for the Idaho Panhandle National Forest discuss the marked change in fire regimes in the modern era. The plan identifies the need to increase use of both mechanical fuel treatment and prescribed burning to manage fuel and forest conditions. However, there are problems with both of these approaches. Much of the National Forest is inaccessible to the equipment needed to remove fuels mechanically. The use of fire can be limited by air quality concerns, cost, and risk of escape from the prescribed burn area.

The LRMP discusses demographic changes in the area. 34 percent of the Idaho Panhandle National Forest is now classified as wildland urban interface. Almost all of the private land under the protection of the Idaho Department of Lands is either in or near wildland urban interface. A growing number of homes and small communities are at risk from wildland fires as the population of the area grows and use changes from agriculture and forestry to recreation and vacation or retirement homes.

The fire danger analysis contained in the FDOP drives the decision process for initial response, fire suppression; fire staffing, fire prevention, dispatching, recreation, campfires, woodcutting and timber operations on the federal lands. It is also the basis for public education, fire danger levels, burn permits, and the regulation of outdoor debris burning by homeowners. **Table 1** displays how fire danger analysis in the FDOP and other plans based on it are used by federal agencies, the Idaho Department of Lands Forest Protective Districts, the Tribe, industry, rural fire departments and members of the public who visit or live in the forest.

The specific wildland fire problem in the Coeur d'Alene Dispatch Area is not necessarily large fires or human caused fires, rather lightning caused fires, and multiple fire days. The fire problem is compounded by population, wildland urban interface, recreation, and industrial use. North Idaho commonly goes into seasonal drought conditions beginning around July 4, and commonly thunderstorms occur during, if not before the third week in July, persisting intermittently throughout the fire season. In the event of dry lightning storms, hundreds of lightning caused fires can occur throughout an episode. The management of incidents as described portray one of the wildland fire problems within the Coeur d'Alene Dispatch Area.

Table 1. Fire Problem Analysis Table

Who	Action	Communication Method	Potential Positive Impacts	Where	Decision Tool
Agencies and Fire Departments	Initial attack (IA) response	Radio Telephone Fax E-mail Text	Successful IA	Staffing Plan	ERC
	Pre-positioning of resources		Improved IA capability	Staffing Plan	ERC and IC
	Suspension of prescribed fire (RX) projects		Prevent escaped Rx fires	Preparedness Plan	ERC
	Daily Staffing		Improved IA capability	Staffing Plan	ERC and IC
Industry	Chainsaw & equipment restrictions	Telephone Mail E-mail	Fire prevention	Restriction/ Closure Plan	ERC
	Off-Highway Vehicle (OHV) restrictions	Face-to-Face Signs	Fire prevention	Restriction/ Closure Plan	ERC
Public	Campground closures	Newspaper Television Adjective Rating Signs Internet Radio Face-to-Face Social Media	Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
	Fuel wood cutting restrictions		Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
	Campfire restrictions		Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
	OHV restrictions		Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
	Debris burning		Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
	Fireworks		Fire prevention	Restriction/Closure Plan/ Fire Prevention Plan	ERC
All	Safety	Face-to-Face NWCG and local Websites	Public and Firefighter Safety	Fire Danger Pocket Cards	ERC

ERC = Energy Release Component; IC = Ignition Component

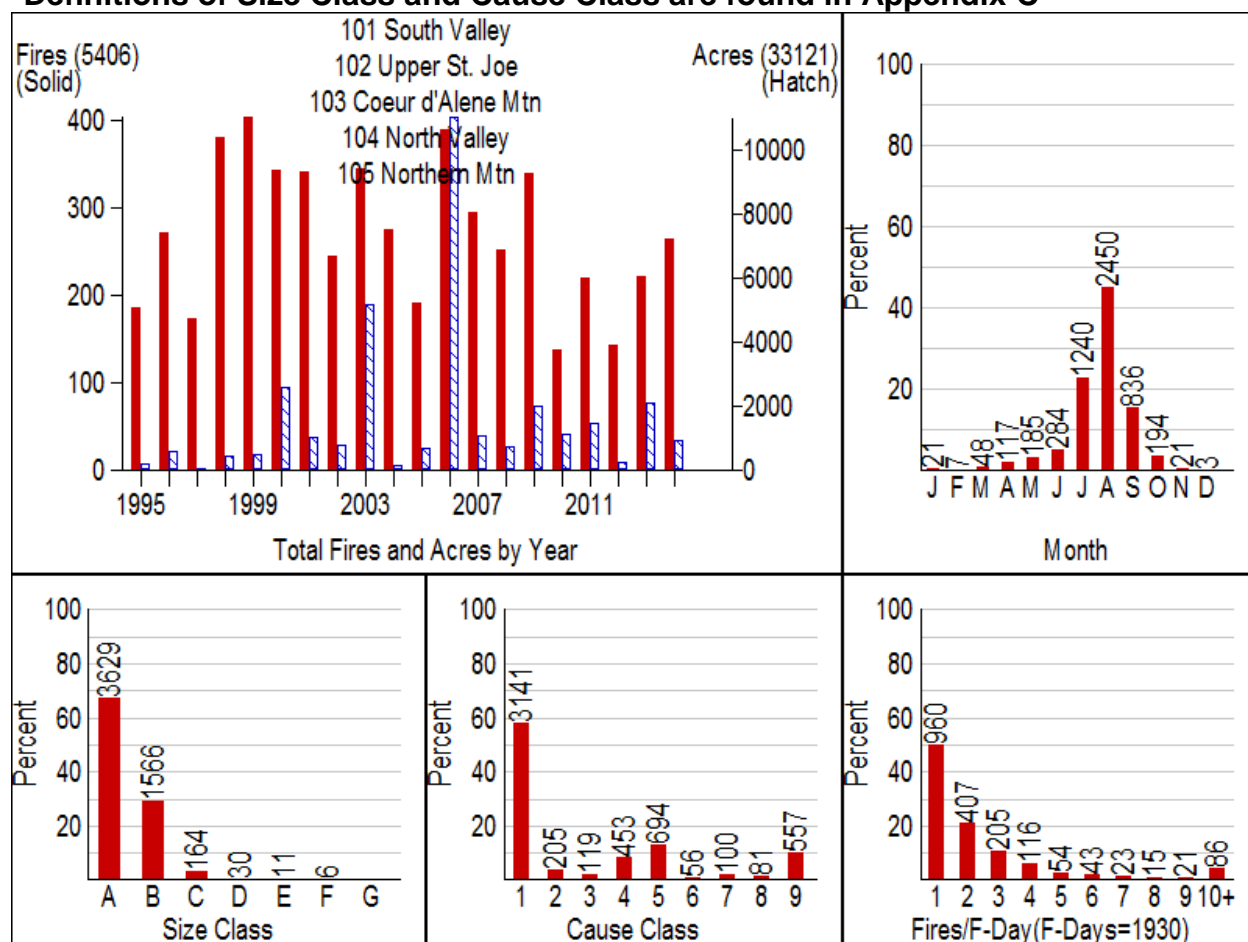
Figure 2 illustrates fire occurrence in the entire FDOP area from 1995 through 2014. 5,406 fires burned 33,121 acres during the past two decades. 67 percent of the fires were smaller than one quarter of an acre and 96 percent were smaller than an acre. The majority of fires were lightning caused. Almost half of the fires burned in August. The most active fire season was 2006 when almost 400 fires burned over 10,000 acres. The six largest fires in the last 20 years were in the “F” size class, burning between 1000 and 5000 acres each.

Much larger fires have burned in the past. A century ago, the Idaho Panhandle experienced widespread fires in the 1910 “Big Blowup”. The largest were in what is now the Southern Mountain FDRA. Very large fires burned again in the 1920s and 1930s. Since the mid-20th century, fire suppression efforts have kept most fires much smaller. Weather and fuel conditions have also contributed to the change in fire regimes. Many large and severe wildfires burned in Central and Southern Idaho beginning in the 1980s, and the LMP anticipates that this trend could soon affect the Idaho Panhandle Area.

Figure 2 summarizes the fire occurrence data for the Coeur d’Alene Dispatch Area by Fire Danger Rating Area. The data includes the years 1995 to 2014 for all agencies, US Forest Service, Idaho Department of Lands, Clearwater-Potlatch Timber Protection Association, Coeur d’Alene Tribe, Kootenai Tribe, and the Bureau of Land Management.

Fire season was defined as May 10 through October 20th in this FDOP. Rationale for this selection was influenced by the closed fire season the Idaho Department of Lands administers for the burn permitting program. The analysis range captures the full extent of wildland fires that could occur in the dispatch area. Several other dates were considered, however, the NFDRS committee decided that May 10 through October 20th works best to describe the fire season in north Idaho.

Figure 2. Fire Occurrence in the Coeur d'Alene Dispatch Area from 1995 to 2014*
***Definitions of Size Class and Cause Class are found in Appendix C**



C. Weather Stations

The Planning Area has ten active Remote Area Weather Stations (RAWS). Eight are managed by Coeur d'Alene Dispatch for the Idaho Panhandle National Forests: Bonners, Saddle Pass, Priest Lake, Hoodoo, Fishhook, Nuckols, Lines Creek, and Magee Peak. The remaining two, Shock and Potlatch, are located in the Clearwater National Forest and are managed by the Grangeville Interagency Dispatch Center. Three of the stations, Hoodoo, Lines Creek and Magee Peak, were excluded from the analysis of the 1995 to 2014 data. Lines Creek and Magee Peak are newer stations that do not have 20 years of data. Hoodoo was moved to its current location in 2005 from Hayden Lake. All stations comply with the standards outlined in the *NWCG NFDRS Weather Station Standards* (PMS 426-3).

For each of the four FDRAs, there is a primary RAWS. For Northern Mountains, Southern Mountains, North Valley, and South Valley, these are Priest Lake, Nuckols, Bonners, and Shock, respectively. **Table 2** lists all RAWS stations and their characteristics with the primary RAWS highlighted in green.

Table 2. RAWS Summary Table

<i>FDRA Zone</i>	<i>Station Name</i>	<i>NWS #</i>	<i>NESDIS ID</i>	<i>Location</i>	<i>Elevation</i>	<i>Aspect</i>	<i>Wx Data Yrs.</i>
Northern Mountains	Saddle Pass	100107	3249657C	T65N R3W 33	5120	SW	1985–present
	Priest Lake	100204	327416FA	T60N R5W 11	2600	Flat	1973–present
North Valley	Bonnors	100101	3274058C	T62N R1E 14	2320	Flat	1973–present
Southern Mountains	Fishhook	100421	3249868E	T44N R5E 30	4250	Flat	1985–present
	Lines Creek	100424	3273D1D 0	T44N R2E 33	5140	Flat	1997–present
	Nuckols	100423	3273C2A6	T48N R4E 15	4000	South	1985–present
	Magee Peak*	100425	3273F73C	T52N R1E 2	4720	Flat	2005–present
South Valley	Potlatch	100603	323764B8	T41N R5W 1	2460	South	1961–present
	Shock	100606	3237874A	T42N R2W 18	3360	South	1985–present
	Hoodoo	100208	3273E44A	T54N R4W 2	2270	Flat	2005–present

**Magee Peak is a new station without established climatology. Weather data collection began on 07/28/05.*

D. Vegetation

The fuels complex of the Planning Area varies, but is most commonly mixed conifers. The vegetation cover of the area is illustrated in Appendix G. Low- and mid-elevation sites are dominated by western hemlock and western red cedar plant associations, with grand fir plant associations appearing in drier sites. The upper elevations are dominated by subalpine fir and mountain hemlock. Most valley bottom locations are developed or agricultural. The predominant vegetation type found within the Planning Area is best represented by NFDRS fuel model G.

Fuel Model G: Closed, short-needle conifer (heavy dead). Fuel Model G is used for dense conifer stands where there is a heavy accumulation of litter and downed woody material. Such stands are typically over mature and may also be suffering insect, disease, wind, or ice damage—natural events that create a very heavy buildup of dead material on the forest floor. The duff and litter are deep and much of the woody material is more than 3 inches in diameter. The undergrowth is variable, but shrubs are usually restricted to openings.

E. Climate

North Idaho has an inland maritime climate. Due to the maritime airflow from the Pacific Ocean, the mountains of northern Idaho have greater precipitation and more moderate temperatures than the rest of Idaho. The wettest areas in the mountains of the Planning Area have average precipitation of over 70 inches of snow and rain per year. The driest valleys receive 20 inches of precipitation per year. The influence of the moist airflow is strongly seasonal, meaning that although the winters are very wet, summers are hot and dry.

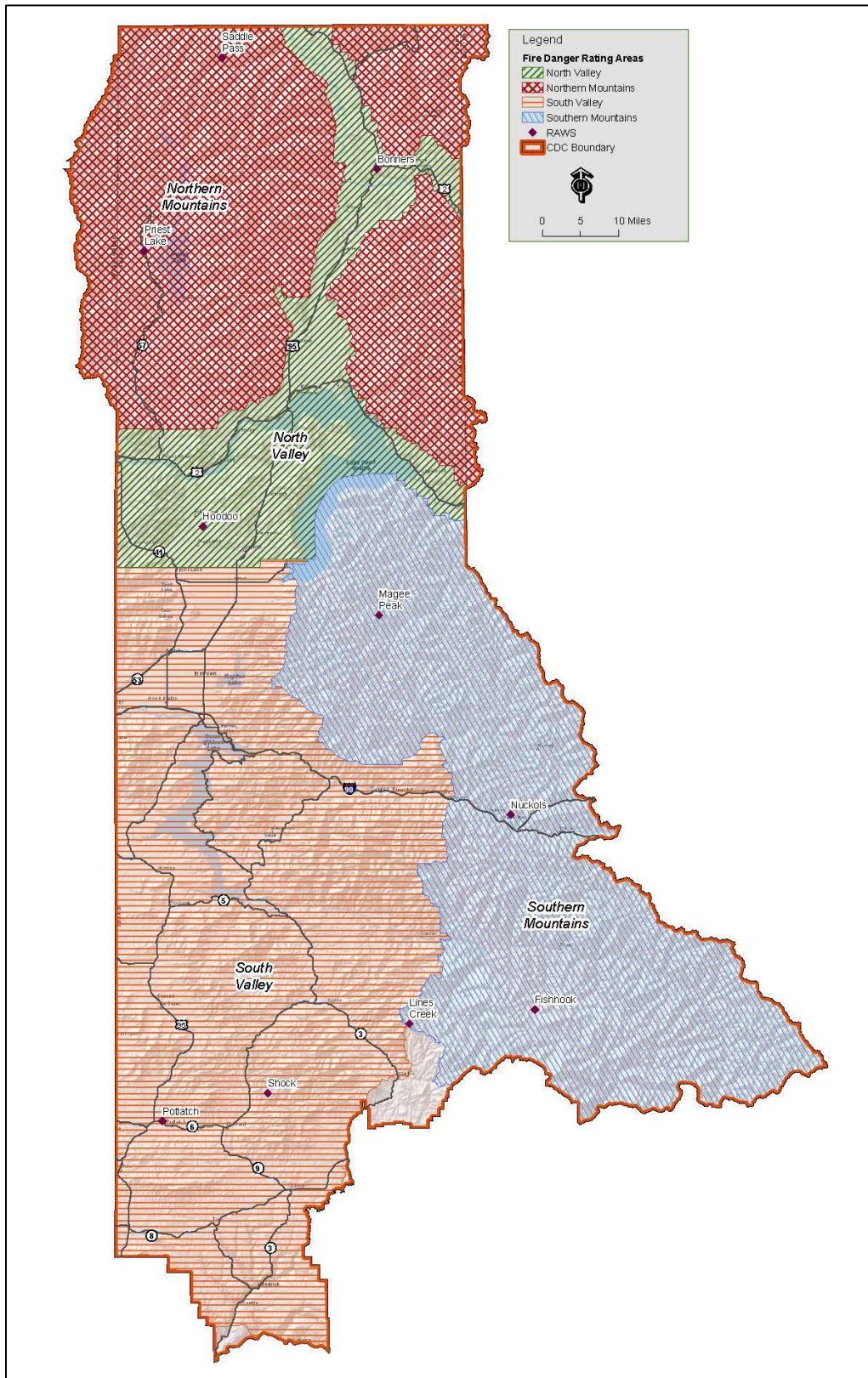
F. Topography

North Idaho is typified by rugged mountainous terrain, split by broad, glaciated valleys and deep river valleys. Elevations range from 1700 feet to in excess of 7,500 feet. The Planning Area is delineated by lands primarily associated with slope class 3 (41-55% gradient).

G. Fire Danger Rating Areas

The Planning Area has four Fire Danger Rating Areas (FDRA): Northern Mountains, Southern Mountains, North Valley, and South Valley. These replace the North, Central, and South Zone FDRAs used in the 2012 FDOP. The NFDRS committee redefined the FDRAs for this version of the FDOP to represent areas with common climate, weather, fuels and topography. The 3,000 foot elevation gradient separates the valley FDRAs from the mountain FDRAs. The Kootenai County and Bonner County line was used to delineate the significant weather differences between the north and south FDRAs. The NFDRS committee originally proposed five FDRAs, Northern Mountains, North Valley, South Valley, St Joe Mountains and Coeur d'Alene Mountains. Analysis of the fire occurrence and weather data revealed that the St Joe and Coeur d'Alene FDRAs had uniform characteristics and fire regimes, and so the NFDRS committee combined them into a Southern Mountains FDRA. The boundaries of the FDRAs are shown below in **Figure 3**.

Figure 3. FDRAs and RAWS Stations

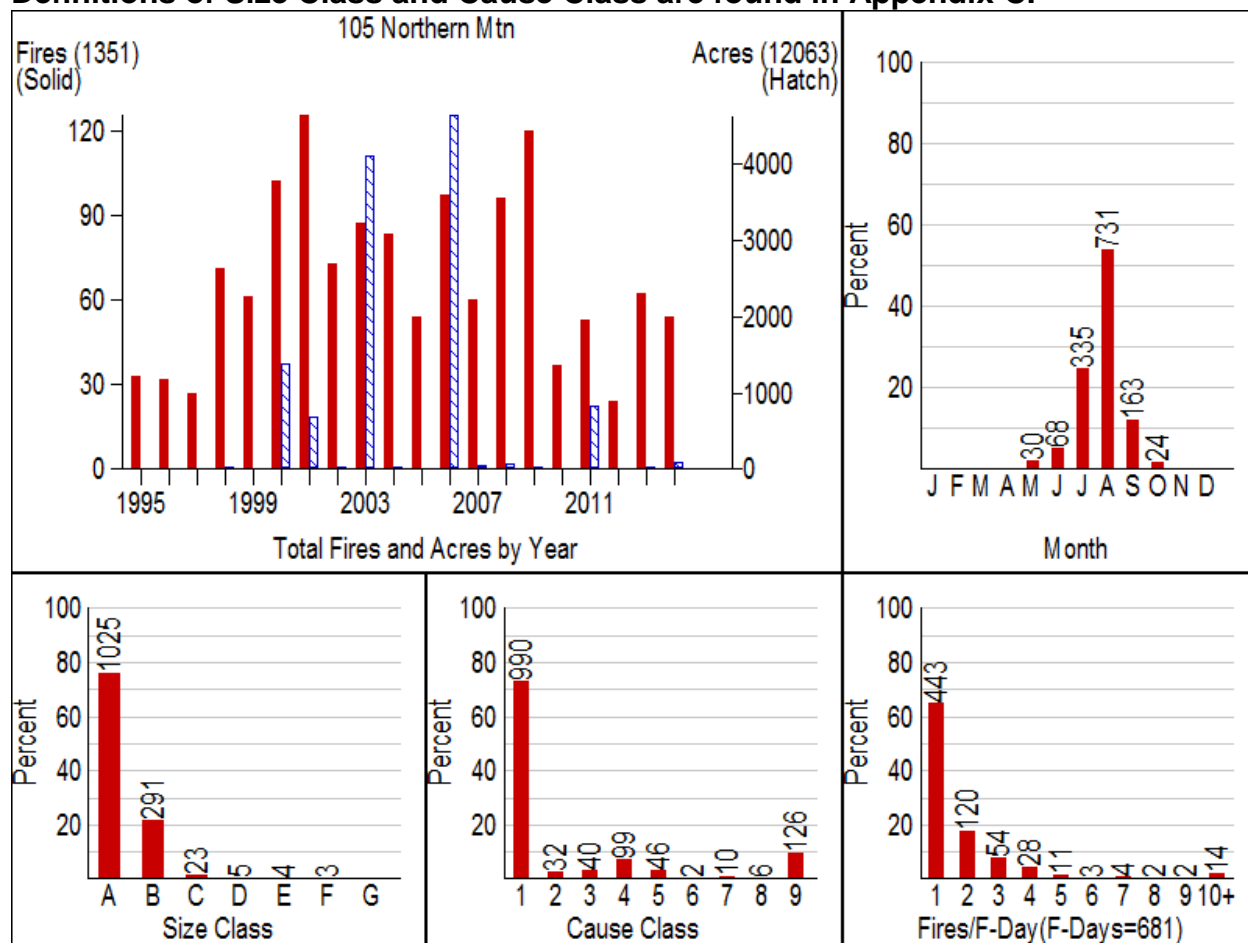


Northern Mountains FDRA

This FDRA covers the mountain ranges on each side of the Kootenai River Valley, encompassing 469,166 acres. The land is primarily forested. The US Forest Service and the Idaho Department of Lands (IDL) provide fire protection, with the IDL providing protection in the Priest Lake Forest Protective District where the FDRA's private lands are concentrated. This FDRA is represented by the Priest Lake RAWS, and uses data from 1995–2014.

The most common cause of fires in this FDRA is lightning (79 percent of fires). The vast majority (76 percent) of fires are Class A, meaning that they are less than one fourth acre in size. Out of the six F-Class fires in the last twenty years, three of them burned in this FDRA. The period of significant fire activity is short, lasting from June to September, (May and October Class A, outlier fires) with most fires occurring in August. **Figure 4** shows the fire occurrence in this FDRA.

Figure 4. Fire Occurrence in the Northern Mountains FDRA from 1995 to 2014*
Definitions of Size Class and Cause Class are found in Appendix C.



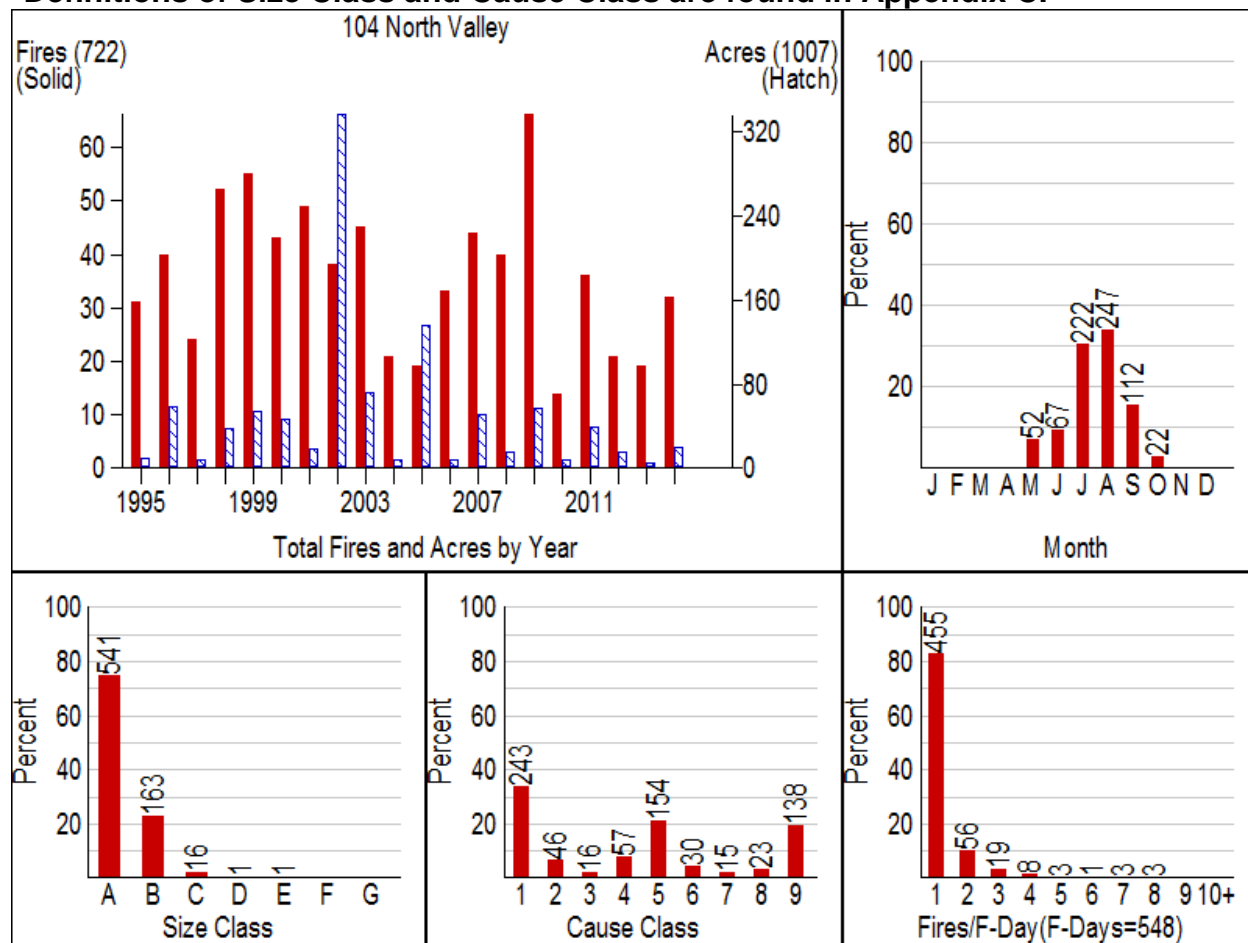
North Valley FDRA

This FDRA covers the Kootenai River Valley and lands on either side of the Pend Orielle River, encompassing 664,923 acres. Land use is a mixture of agriculture and forest, with some private and some public land. The IDL is mostly responsible for fire protection, with their purview divided between the Kootenai Valley Forest Protective District and the Pend Orielle Forest Protective District. This FDRA is represented by the Bonners RAWS, and uses data from 1995-2014.

The majority of fires in this FDRA are human caused (68 percent), with lightning as the second most common cause. The vast majority (75 percent) of fires are class A, meaning that they are less than one quarter acre in size. In the last twenty years, there have been no fires larger than 1000 acres in this FDRA. The period of fire activity is longer than in the mountains, lasting from May through the beginning of October.

Figure 5. Fire Occurrence in the North Valley FDRA from 1995 to 2014*

***Definitions of Size Class and Cause Class are found in Appendix C.**



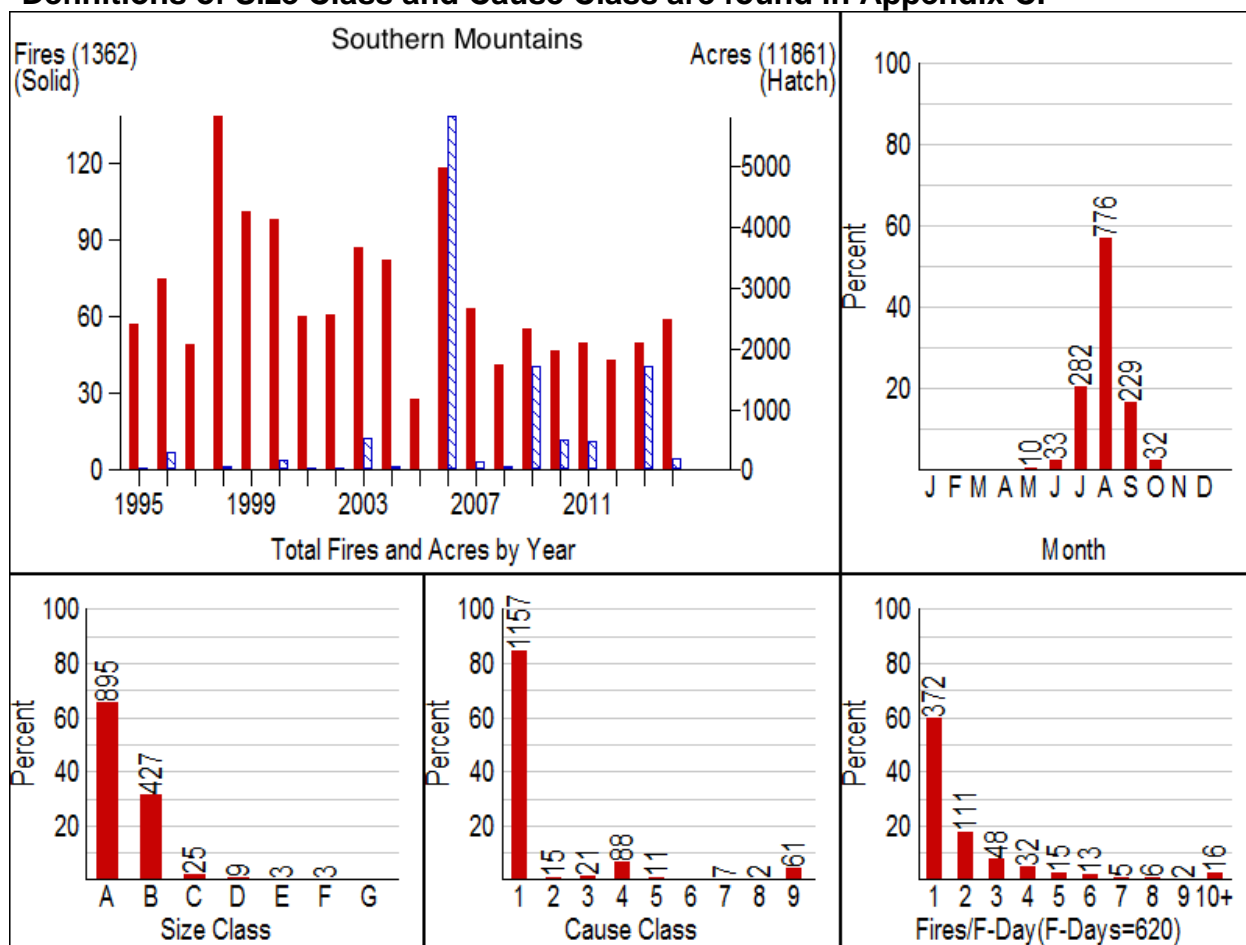
Southern Mountains FDRA

This FDRA covers the Bitterroot and Coeur d'Alene mountain ranges along the Montana Border, encompassing 1,566,569 acres. The land is primarily forested, and is mostly USDA Forest Service land. The USFS is the main agency responsible for fire protection. The weather in this FDRA is represented by the Nuckols RAWS, and uses data from 1995–2014.

Fires in this FDRA are usually caused by lightning (85 percent). The vast majority (65 percent) of fires are class A, meaning that they are less than one quarter acre in size. Out of the six class F fires in the last twenty years, three occurred in this FDRA. The period of fire activity lasts from July to the beginning of October.

Figure 6. Fire Occurrence in the Southern Mountains from 1995 to 2014*

***Definitions of Size Class and Cause Class are found in Appendix C.**



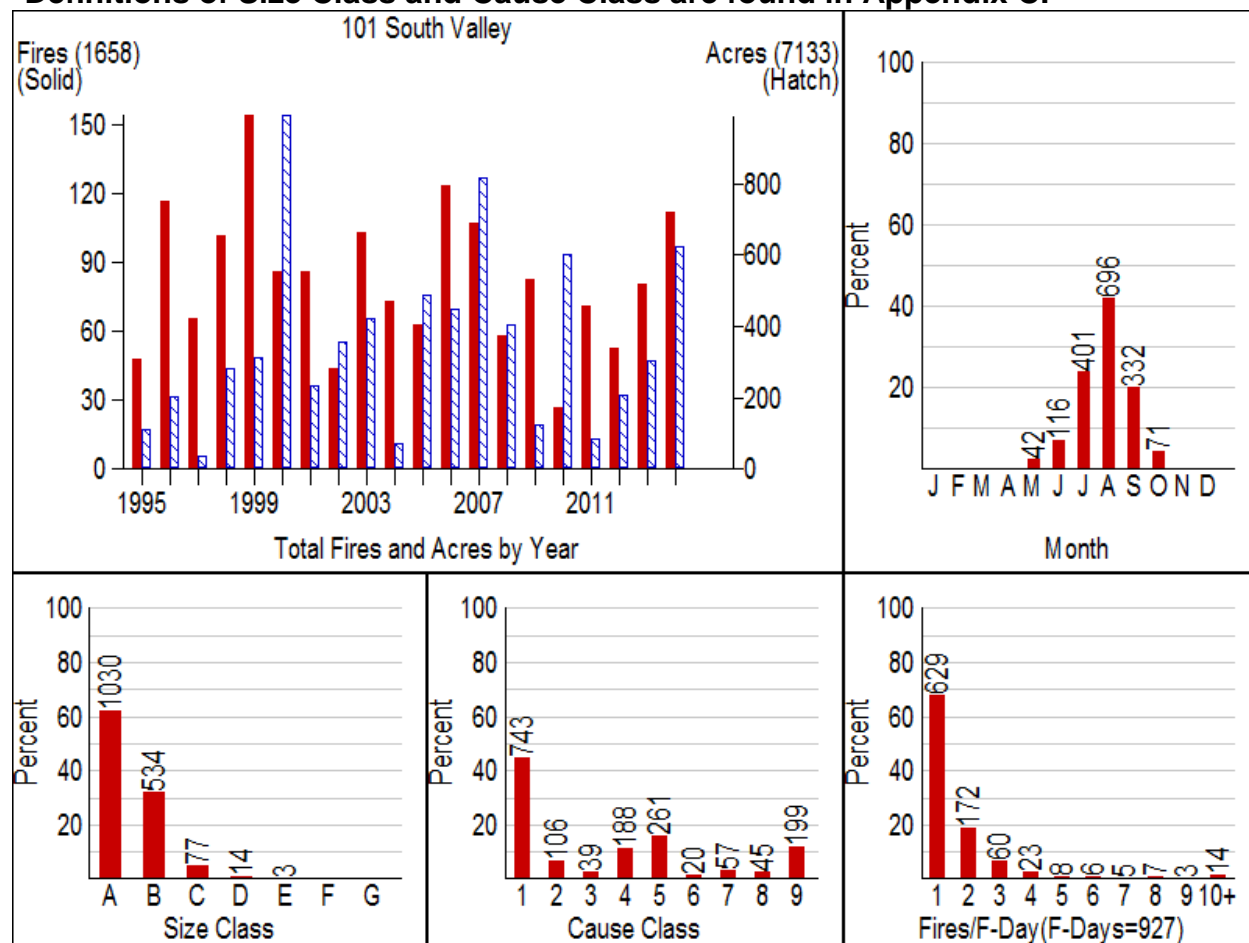
South Valley FDRA

This FDRA includes the Palouse Flatlands. It encompasses 2,042,707 acres. The FDRA is mostly private land, and includes patches of Forest Service land in the Panhandle and Clearwater National Forests. Responsibility for fire protection is split between the Coeur d'Alene tribe, the Timber Protection Association, and the IDL, with the IDL handling the majority. Areas under IDL protection include the Mica Forest Protective Area, the Cataldo Forest Protective Area, the Saint Joe Forest Protective Area, and some USFS lands in Panhandle NF and Clearwater NF. The weather in this FDRA is represented by the Shock RAWS, and uses data from 1995-2014.

The majority of fires in this FDRA are human caused (55 percent). The majority (64 percent) of fires are class A, meaning that they are less than one quarter acre in size. In the last twenty years, there have been no fires larger than 1000 acres in this FDRA. The period of fire activity is longer than in the mountains, lasting from May through October.

Figure 7. Fire Occurrence in the South Valley FDRA from 1995 to 2014*

***Definitions of Size Class and Cause Class are found in Appendix C.**



IV. CLIMATOLOGICAL AND FIRE BUSINESS ANALYSIS

A. Fire Weather Data (1995–2014)

Ten RAWS stations are located in the FDOP area. The weather data from seven of the RAWS stations was analyzed. The remaining three had insufficient years of data to be included.

Weather data from the seven RAWS stations was retrieved through the FAMWEB data warehouse. This data was reviewed and edited by the NFDRS committee. Data spanning twenty years was used for the analysis. Weather data for May 10 through October 20 was used, coinciding with the declared fire season in the area. 96 percent of ignitions in the twenty years analyzed occurred from May through October.

B. Fire Occurrence Data (1995–2014)

Fire occurrence data for the four (USFS, BLM, USFWS, BIA) federal agencies was obtained from the NIFMID database. The fire occurrence data for state and private lands was provided by the Idaho Department of Lands and integrated with the federal data.

C. Parameters Used for Each FDRA

Slope class was chosen based on examination of GIS layers for the analysis area. Slope Class was set at 3 (41 to 55 percent) for the Northern Mountains, North Valley and Southern Mountains FDRAs. Slope Class was set at 2 (26 to 40 percent) for the South Valley FDRA.

The Climate Class was set at 3 (Humid Forests) for the analysis.

Fuel model G best represents the coniferous forests found throughout the area.

“A fuel model is a set of numbers representing the contribution of the dead and live plant material representative of a fire danger rating area; .fuel model is not intended to be a perfect match to the local fuel bed conditions, only a reasonable representation for fire danger rating purposes” (Gaining an Understanding of NFDRS). Fuel Model F was considered, but deemed less representative of the dispatch area as a whole.

Herbaceous fuels were set as perennial.

Green-up dates were set as follows:

- Northern Mountains (Priest Lake RAWS)—5/25
- North Valley (Bonners RAWS)—4/26
- Southern Mountains (Nuckols RAWS)—6/5
- South Valley (Shock RAWS)—5/28

The Freeze date was set at December 31st for the purpose of the analysis.

D. Correlation of NFDRS Indices with Fire Occurrence

FireFamily Plus was used to complete a comprehensive comparison of fire occurrence to NFDRS inputs and outputs from each RAWS station. The program was used to determine whether there were statistically valid and predictive correlations between

weather and fire days, multiple fire days and large fire days. In this analysis, multiple fire days referred to days with 3 fires or more. Large fires referred to fires of 5 acres or more in size.

Three different statistical tests were used to find the indices or inputs with the best correlations to fire days, multiple fire days and large fire days. The indices with the best correlations to fire occurrence were narrowed down to Energy Release Component, 100 hour fuel moisture and 1000 hour fuel moisture. The final candidates are shown in **Table 3**. The table is organized by RAWS station for each FDRA and a SIG that combined the weather data from the RAWS stations in each FDRA.

The NFDRS committee reviewed the results in **Table 3** and chose ERC as the best predictor of fire occurrence.

The fields where the values meet the acceptable levels for each statistical test are highlighted in green. The last column sums the number of acceptable tests for each RAWS station and index combination.

One RAWS station was selected to represent each FDRA. **Table 3** also shows the confidence levels for each weather station grouped by FDRA. The North Valley FDRA has only one weather station. In each of the other FDRAs, one RAWS station performed better than both the other RAWS station and the SIG that included both of them.

The acceptable R squared value for Fire Days is 0.90 or greater, for Multiple Fire Days and Large Fire Days the top five are highlighted. The correlation is better as R squared approaches 1.

For all the chi squared values (FD, MFD, LFD) the maximum acceptable value is 15.51 which is the value for a 0.05 probability with 8 degrees of freedom.

The ranges (P-Range) were identified as having the maximum spread between the minimum and maximum values, making sure the minimum value was close to zero.

Table 3. Comparisons of Confidence Levels for RAWS Stations and SIGS by each FDRA

Station	Variable	FD R ²	FD Chi ²	FD P Range	LFD R ²	LFD Chi ²	LFD P	MFD R ²	MFD Chi ²	MFD P	# Green
Southern Mountains											
Fishhook	FM1000	0.88	52.47	0.00-0.55	0.83	11.27	0.00-0.08	0.69	40.25	0.00-0.17	2
Fishhook	FM100	0.97	8.94	0.01-0.51	0.76	11.66	0.00-0.10	0.61	37.9	0.00-0.15	3
Fishhook	ERC	0.8	84.96	0.04-0.65	0.83	10.40	0.00-0.14	0.49	71.08	0.01-0.20	4
Nuckols	FM1000	0.95	16.11	0.01-0.52	0.86	6.7	0.00-0.10	0.90	10.72	0.00-0.20	6
Nuckols	FM100	0.96	11.23	0.00-0.47	0.75	21.35	0.00-0.11	0.81	15.07	0.00-0.14	4
Nuckols	ERC	0.92	24.26	0.04-	0.89	7.21	0.00-	0.75	24.12	0.01-	7

Station	Variable	FD R ²	FD Chi ²	FD P Range	LFD R ²	LFD Chi ²	LFD P	MFD R ²	MFD Chi ²	MFD P	# Green
				0.60			0.16			0.21	
SIG	FM1000	0.93	31.70	0.01-0.56	0.90	6.69	0.00-0.10	0.77	33.26	0.00-0.21	6
SIG	FM100	0.98	6.10	0.00-0.50	0.87	7.11	0.00-0.10	0.71	30.20	0.00-0.15	5
SIG	ERC	0.91	37.54	0.03-0.64	0.88	7.36	0.00-0.16	0.68	40.85	0.01-0.22	6
Northern Mountains											
Priest Lake	FM1000	0.96	14.14	0.00-0.63	0.83	5.61	0.00-0.07	0.93	7.36	0.00-0.23	8
Priest Lake	FM100	0.94	16.13	0.00-0.06	0.80	5.40	0.00-0.08	0.81	14.32	0.00-0.20	7
Priest Lake	ERC	0.97	11.04	0.02-0.73	0.79	6.38	0.00-0.12	0.86	12.67	0.00-0.25	9
Saddle Pass	FM1000	0.96	8.46	0.01-0.56	0.62	12.84	0.00-0.06	0.81	13.93	0.00-0.18	5
Saddle Pass	FM100	0.96	7.48	0.01-0.57	0.72	11.06	0.00-0.11	0.71	13.33	0.00-0.15	5
Saddle Pass	ERC	0.93	15.85	0.07-0.70	0.77	7.51	0.00-0.16	0.58	30.77	0.01-0.12	5
SIG	FM1000	0.97	12.11	0.00-0.66	0.78	8.67	0.00-0.09	0.89	13.85	0.00-0.27	8
SIG	FM100	0.97	10.16	0.00-0.58	0.72	12.47	0.00-0.09	0.83	11.73	0.00-0.17	5
SIG	ERC	0.96	12.76	0.04-0.74	0.77	9.36	0.00-0.14	0.80	16.16	0.01-0.25	7
South Valley											
Shock	FM1000	0.94	19.51	0.02-0.58	0.93	6.09	0.00-0.17	0.86	14.80	0.00-0.16	4
Shock	FM100	0.97	9.54	0.01-0.55	0.96	3.36	0.00-0.13	0.92	6.31	0.00-0.15	6
Shock	ERC	0.97	12.76	0.06-0.68	0.95	5.11	0.00-0.22	0.92	7.79	0.00-0.21	9
Potlatch	FM1000	0.98	6.58	0.01-0.66	0.91	7.25	0.00-0.17	0.93	8.30	0.00-0.23	8
Potlatch	FM100	0.99	4.70	0.01-0.65	0.96	2.27	0.00-0.15	0.89	12.75	0.00-0.23	7
Potlatch	ERC	0.97	14.45	0.03-0.75	0.90	11.03	0.00-0.24	0.92	9.54	0.00-0.29	9
SIG	FM1000	0.98	9.07	0.01-	0.97	2.61	0.00-	0.91	12.07	0.00-	8

Station	Variable	FD R ²	FD Chi ²	FD P Range	LFD R ²	LFD Chi ²	LFD P	MFD R ²	MFD Chi ²	MFD P	# Green
				0.62			0.17			0.20	
SIG	FM100	0.99	2.38	0.01- 0.62	0.96	3.11	0.00- 0.15	0.90	12.85	0.00- 0.20	8
SIG	ERC	0.97	11.68	0.04- 0.71	0.92	9.09	0.00- 0.22	0.91	11.06	0.00- 0.24	9
North Valley											
Bonnars	FM1000	0.97	5.93	0.01- 0.46	0.83	5.80	0.00- 0.09	0.75	11.82	0.00- 0.09	5
Bonnars	FM100	0.96	7.12	0.01- 0.42	0.72	7.15	0.00- 0.04	0.96	1.34	0.00- 0.07	5
Bonnars	ERC	0.92	17.00	0.04- 0.58	0.89	3.36	0.00- 0.13	0.73	11.6	0.00- 0.11	7

E. Fire Business Breakpoints

The stations and indices selected by the NFDRS committee were used to develop the breakpoints for each station and FDRA. The graphs showing the breakpoints are in Appendix D. The vertical lines were set and then adjusted according to the instructions in the FireFamilyPlus 4.1 User's Guide. The breakpoints are listed in **Table 4**.

Table 4. FDRA Preparedness Levels

FDRA	RAWS Station	Data Years Used	Fuel Model	NFDRS Index	Fire Business Threshold Ranges
Northern Mountains	Priest Lake	1995–2014	G	ERC	PL 1/ SL1 0–17 PL 2/ SL2 18–30 PL 3/ SL3 31–42 PL 4/ SL4 43–49 PL 5/ SL5 50+
North Valley	Bonnors	1995–2014	G	ERC	PL 1/ SL1 0–23 PL 2/ SL2 24–36 PL 3/ SL3 37–54 PL 4/ SL4 55–62 PL 5/ SL5 63+
Southern Mountains	Nuckols	1995–2014	G	ERC	PL 1/ SL1 0–20 PL 2/ SL2 21–41 PL 3/ SL3 42–64 PL 4/ SL4 65–71 PL 5/ SL5 72+
South Valley	Shock	1995–2014	G	ERC	PL 1/ SL1 0–22 PL 2/ SL2 23–44 PL 3/ SL3 45–73 PL 4/ SL4 74–81 PL 5/ SL5 82+

The fire business breakpoints form the basis for preparedness levels and staffing levels. In addition to the breakpoints a number of other factors are considered in the development of the preparedness and staffing plans. These include Ignition component, drawdown, the number of incidents already being managed in the Planning Area, other large fires being managed locally, in the geographic area, or nationally, special weather conditions such as lightning and wind events, holidays and special events.

In some cases a single value for Preparedness Level is needed for the entire Dispatch Zone. This is valuable for upward reporting and for describing the overall fire danger situation to the public and managers. The method for deriving a single preparedness level from the four FDRAs and RAWS stations is found in Tables 5 and 6.

First the PL is determined for each of the FDRA stations. A score is assigned to each of the FDRAs. The scores for the four FDRAs are summed. The CDC Preparedness level is determined from the second chart.

Table 5. Determination of the Overall CDC Preparedness Level
Step 1: Determine the Score for each FDRA

FDRA	RAWS Station	Data Years Used	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	Score	Weighted Fire Concentration*
Northern Mountains	Priest Lake	1995–2014	G	ERC	PL 1/ SL1 0–17 PL 2/ SL2 18–30 PL 3/ SL3 31–42 PL 4/ SL4 43–49 PL 5/ SL5 50+	0.2 0.2 0.5 0.7 0.7	24%
North Valley	Bonnors	1995–2014	G	ERC	PL 1/ SL1 0–23 PL 2/ SL2 24–36 PL 3/ SL3 37–54 PL 4/ SL4 55–62 PL 5/ SL5 63+	0.1 0.1 0.3 0.4 0.4	14%
Southern Mountains	Nuckols	1995–2014	G	ERC	PL 1/ SL1 0–20 PL 2/ SL2 21–41 PL 3/ SL3 42–64 PL 4/ SL4 65–71 PL 5/ SL5 72+	0.3 0.3 0.6 0.8 0.8	28%
South Valley	Shock	1995–2014	G	ERC	PL 1/ SL1 0–22 PL 2/ SL2 23–44 PL 3/ SL3 45–73 PL 4/ SL4 74–81 PL 5/ SL5 82+	0.3 0.3 0.7 1.0 1.0	34%

*Determination of Weighted Fire Concentration for each of the FDRAs in the Coeur d’Alene Dispatch Area.

FDRA Name	Number of Fires	Total Acres	FDRA acres/ number of fires	Weighted Fire Concentration (%)
North Mountains	3,746	1,361,747	364	24%
North Valley	3,117	664,923	213	14%
South Mountains	3,757	1,563,433	416	28%
South Valley	4,053	2,042,707	504	34%

Table 6. Step 2—Sum the Scores for the FDRAs and assign a CDC Preparedness Level using the chart below.

Total Score	CDC PL	Example Scores
0.9 – 2.0	1	All FDRAs at PL 1 or PL 2. No large fires in progress – Most FDRAs with Staffing Level 3 or lower, potential for escaped fires is low.
0.9 – 2.1	2	Majority of FDRAs at PL 2, one or two at PL1/3. No large fires in progress – two of the Districts with Staffing Level 3, actionable fires susceptible to initial attack control although a few fires are escaping to B or C size class. Potential for escaped fires, moderate. Large fires in progress – One District requiring assistance including overhead, crews, and equipment.
2.1 – 2.8	3	Majority of FDRAs at PL 3, one or two at PL2/4. No large fires in progress – Two Districts at Staffing Level 4, actionable fires moderately susceptible to initial attack as indicated by higher number of B and C class fires. No break in weather predicted within 48 hours. Large fires in progress – Two Districts requiring assistance. No more than two class D+ suppression fires in progress requiring assistance. One or more incident management teams committed within the area.
2.1 – 2.8	4	Majority of FDRAs at PL 4, one or two at PL3/5. No large fires in progress – Three Districts at Staffing Level 4 or higher, actionable fires susceptible to initial attack as evidenced by the high number of class C and D fires each day. Multiple ignitions causing a large number of fires to escape initial attack. Large fires in progress – All Districts requiring assistance. More than three class D or two class E or larger suppression fires requiring assistance. More than two incident management teams committed within the area.
2.9 +	5	Majority of FDRAs at PL 5, one or two at PL4. Large fires in progress – Multiple fires are requiring incident management teams. Significant competition for resources is occurring.

Supplemental preparedness actions and considerations for moving Preparedness Level include the following items:

- Management direction and considerations;
- Fire prevention actions, including closures/restrictions, media messages, signing, and patrolling;
- Prepositioning suppression resources;
- Cooperator discussion and/or involvement;
- Safety considerations: safety message, safety officer;
- Augmentation of suppression forces;
- Support function: consideration given to expanded dispatch activation, 1 initial attack dispatch staffing, and other support needs (procurement, 2 supply, ground support, and communication);
- Support staff availability outside of fire organization;
- Communication of Fire Weather Watch and Red Flag Warning conditions;
- Fire danger/behavior assessment;
- Briefings for management and fire suppression personnel;
- Fire information - internal and external;
- Multi-agency coordination groups/area command activation;
- Prescribed fire direction and considerations; and
- Increased detection activities.

F. Analysis of Climatological Breakpoints

A cumulative frequency analysis of ERC was completed for each of the four primary stations. The same values for fire season, climate, fuel model and slope class were used as in the fire business breakpoint analysis. The graphs of these analyses are located in Appendix E.

The critical percentages selected were the 90th and 97th percentiles, as required by national policy for the USDA Forest Service. When the ERC reaches the 90th percentile line, this means that it has reached a point where only 10 percent of all the ERC values in the last 20 years are higher. When the ERC reaches the 97th percentile, it means that only 3 percent of all the ERC values in the last 20 years are higher. The graphs display the maximum, minimum and average values for each date in the time period (1995- 2014). The visual display can be used to compare the ERC on a given day to all other days in the last 20 years. Is the ERC on July 1, for example, higher or lower than it has been on that date during the last 20 years? This same analysis is used to create the fire danger pocket cards, for seasonal risk analysis and for severity requests.

The climatological analysis does not provide a correlation between ERC and fire occurrence. It allows the user to make a visual comparison between fire danger trends and fire occurrence. In each graph two selected years of ERC are displayed with large fire days and multiple fire days indicated on the graphs by triangles and arrows.

G. Adjective Fire Danger Rating

In 1974, the USDA Forest Service, Bureau of Land Management, and State organizations established a standard adjective description for five levels of fire danger for use in public information releases and fire prevention signing. For this purpose only, fire danger is expressed using the adjective levels and color codes described below (Table 7).

Table 7. Adjective Fire Danger

Fire Danger Class and Color Code	Description
L=Low (Green)	Fuels do not ignite readily from small firebrands, although a more intense heat source such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
M=Moderate (Blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
H=High (Yellow)	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are hit hard and fast while small.
VH=Very High (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn in heavier fuels.
E=Extreme (Red)	Fires start easily, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

The Adjective Fire Danger is used by agency personnel in interactions with the public and industry. The type and frequency of interaction depends on the level of adjective fire danger.

Adjective Rating for individual stations is determined using ERC Fuel Model G. Although NFDRS processors (i.e., WIMS) will automatically calculate the adjective class rating, CDC will manually determine Adjective Fire Danger Rating based up on fire business thresholds. The actual determination of the daily adjective rating is based on the current value of a selected staffing index (ERC) and ignition component using tables located in section V. The following tables in Section V represent the breakpoints that are being used for each weather station, using the 5 Fire Danger Adjective Ratings in Table 7.

V. FIRE DANGER BASED DECISIONS

Adjective Fire Danger Rating for each of the FDRAs

Adjective Fire Danger Rating is managed uniquely for each FDRA and also cumulatively for the Coeur d'Alene Dispatch Area as a whole. Adjective Fire Danger Ratings will be computed on weekly basis every Thursday. However, Coeur d'Alene Dispatch will be calculating the Preparedness Level and Adjective Fire Danger Rating on a daily basis, but reporting on a weekly basis. Fire manager discretion for determination of the signed fire danger rating at a given location is permissible provided that the foundation indices are used to guide the decision and consensus is obtained with the interagency partners.

Staffing Level/ ERC and Ignition Component will be used as a foundation to determine fire danger for each of the identified representative weather stations for FDRAs. The FDRAs in north Idaho zone span administrative and jurisdictional lines, protection boundaries, District and Area Offices. For each FDRA the following guidelines will be followed for coordination and determination and signing of the adjective fire danger rating for each FDRA; identified fire managers will also coordinate with their respective rural fire districts to ensure consistency with fire danger signing. Adjective Fire Danger Rating for each of the FDRAs will be communicated to CDC Dispatch and reported on the CDC Dispatch website, along with fire danger for the overall area. When computing the overall CDC Fire Danger Rating, the process outlined in Tables 8 -13 will be used.

Northern Mountains:

US Forest Service Priest Lake Ranger District, Bonners Ferry Ranger District, and IDL Priest Lake Supervisory Area.

Table 8. Adjective Fire Danger Rating, Northern Mountains, Priest Lake wx station

Staffing Levels/ Fire Business ERC	Adjective Fire Danger Rating				
1/ 0-17	L	L	L	M	M
2/ 18-30	L	M	M	M	H
3/ 31-42	M	M	H	H	VH
4/ 43-49	M	H	VH	VH	E
5/ 50+	H	VH	VH	E	E
Ignition Component	0-9	10-25	26-39	40-49	50+

Northern Valley:

US Forest Service Sandpoint Ranger District, Bonners Ferry Ranger District, IDL Pend Orielle, and Kootenai Valley Supervisor Area.

Table 9. Adjective Fire Danger Rating, Northern Valley, Bonners wx station

Staffing Levels/ Fire Business ERC	Adjective Fire Danger Rating				
1/ 0-23	L	L	L	M	M
2/ 24-36	L	M	M	M	H
3/ 37-54	M	M	H	H	VH
4/ 55-62	M	H	VH	VH	E
5/ 63+	H	VH	VH	E	E
Ignition Component	0-10	11-21	22-37	38-48	49+

Southern Mountains:

Clearwater-Potlatch Timber Protection Association, US Forest Service
Coeur d'Alene River, St. Joe, Sandpoint Ranger District, IDL Cataldo, and
West St. Joe Supervisor Area.

Table 10. Adjective Fire Danger Rating, Southern Mountains, Nuckols wx station

Staffing Levels/ Fire Business ERC	Adjective Fire Danger Rating				
1/ 0-20	L	L	L	M	M
2/ 21-41	L	M	M	M	H
3/ 42-64	M	M	H	H	VH
4/ 65-71	M	H	VH	VH	E
5/ 72+	H	VH	VH	E	E
Ignition Component	0-10	11-24	25-49	50-64	65+

Southern Valley:

Coeur d'Alene Tribe, US Forest Service Coeur d'Alene River, St. Joe
Ranger District, IDL Mica, and West St. Joe, and Ponderosa Supervisor
Area.

Table 11. Adjective Fire Danger Rating, Southern Valley, Shock wx station

Staffing Levels/ Fire Business ERC	Adjective Fire Danger Rating				
1/ 0-22	L	L	L	M	M
2/ 23-44	L	M	M	M	H
3/ 45-73	M	M	H	H	VH
4/ 74-81	M	H	VH	VH	E
5/ 81+	H	VH	VH	E	E
Ignition Component	0-11	12-23	24-36	37-45	46+

Overall CDC Dispatch Area:

Federal, State, Tribal, Protection Association Duty Officers and CDC Center Manager.

**Table 12. Determination of the Overall CDC Adjective Fire Danger
Step 1: Determine the Score for each FDRA**

FDRA	RAWS Station	Data Years Used	Fuel Model	NFDRS Index	Adjective Fire Danger	Score
Northern Mountains	Priest Lake	1995–2014	G	ERC	Low Moderate High Very High Extreme	1 2 3 4 5
North Valley	Bonnors	1995–2014	G	ERC	Low Moderate High Very High Extreme	2 3 4 5 6
Southern Mountains	Nuckols	1995–2014	G	ERC	Low Moderate High Very High Extreme	1 2 3 4 5
South Valley	Shock	1995–2014	G	ERC	Low Moderate High Very High Extreme	2 3 4 5 6

Table 13. Step 2—Sum the Scores for the FDRAs and assign a CDC Preparedness Level using the chart below.

Total Score	CDC Fire Danger Adjective	Example Scores
6 - 7	Low	<ul style="list-style-type: none"> • All FDRAs at Low • Only one of the Valley FDRAs at Moderate with the rest of the FDRAS at Low.
8-11	Moderate	<ul style="list-style-type: none"> • Both Valley FDRAs at Moderate and the other two FDRAs at Low • All FDRAS at Moderate • Only one of the Valley FDRAs at High with the rest of the FDRAs at Moderate
12–15	High	<ul style="list-style-type: none"> • Both Valley FDRAs at High and the other two FDRAs at Moderate • All FDRAS at High • Only one of the Valley FDRAs at Very High with the rest of the FDRAs at High
16–19	Very High	<ul style="list-style-type: none"> • Both Valley FDRAs at Very High and the other two FDRAs at High • All FDRAS at Very High • Only one of the Valley FDRAs at Extreme with the rest of the FDRAs at Very High
20–22	Extreme	<ul style="list-style-type: none"> • Both Valley FDRAs at Extreme and the other two FDRAs at Very High • All FDRAS at Extreme

VI. OPERATIONAL PROCEDURES

A. Seasonal Schedule/WIMS Station Catalog Maintenance

1. Station Initialization and Shutdown

The Station Owner (either CDC or the Grangeville Interagency Dispatch Center) is responsible for station initialization; timing should be coordinated with the NFDRS Committee. Approximately two weeks prior to the peak of greenness the herb state should be set to green to trigger greenup. This point would typically be about mid-May, with peak of green-up being early June. Since greenup varies from station to station, the date should be validated with field personnel. Normalized Difference in Vegetative Index (NDVI) imagery may also be used to monitor greenness.

Once a killing frost has occurred in the fall, the station herb state should be set to frozen. A killing frost involves several days with minimum temperatures at approximately 28 degrees or less, for several hours.

Plans are underway to automate the greenup and freeze process in WIMS. Until this occurs the station owners will need to initiate the process in each station catalog.

2. Station Catalog inputs in WIMS

The Station Owner is responsible for ensuring that appropriate catalogs are tracked in WIMS. Catalogs should be coordinated with the NFDRS committee.

B. Daily Schedule/WIMS Observation Monitoring and Output

1. Quality Control Station Data

Weather data for the previous 24 hours will be checked by looking at hourly Inputs (DRAWS fastpath in WIMS) for readings inconsistent with current conditions. These could possibly indicate instrument errors.

2. Enter Observations

All observations will be for the hourly weather record closest to 1300 hours.

Tasks associated with publishing an observation should be accomplished by 1500 hours each day, so that the observations will be available to the Spokane National Weather Service Office by that time. This will ensure that the Office can enter trend forecasts in time for the next day's forecasted indices.

C. Weather Station Monitoring and Maintenance

RAWS station monitoring is completed by the contractor (FTS) and by the Station Owners. The contractor is responsible for maintaining and repairing the stations to the terms of the contract.

VII. PROGRAM NEEDS

A. Weather Station Needs

The current set of RAWS stations provides adequate coverage of the CDC area. Regular communication with FTS should be scheduled before, during and after

fire season to make sure that stations are maintained, that sensors are replaced and that the stations contain the communication devices needed to transmit data. CDC should communicate regularly with the Grangeville Interagency Dispatch Center regarding the two Clearwater National Forest RAWS stations.

The three newest RAWS stations, Magee Peak, Hoodoo and Lines Creek, should be incorporated into the FDOP analysis as soon as they have 20 years of historical data.

B. NFDRS, RAWS and WIMS Training

This should be completed by NFDRS Committee. It is also recommended to have dispatchers complete WIMS Training.

C. Seasonal Tracking of Indices

Appendix E contains the ERC Statistical Graphs for four weather stations. In order to track the ERC as compared to historical fire years, the Statistical Graphs are rerun with current year weather on a regular schedule.

D. Update of Pocket Cards

The Fire Danger Pocket Cards should be annually. The stations and indices should include, but not be limited to, the ERC at the four representative stations. The Fire Danger Pocket Cards should be made available both on the NIFC website and local websites. They should be distributed to incoming Incident Management Teams (IMTs) and firefighting resources.

E. FDRAS

The 2015 fire season is the first opportunity to evaluate the four new FDRAs described in this FDOP. At the close of the season, the NFDRS committee and fire managers should discuss the performance of the FDRAs and the weather stations, and make adjustments to the FDOP as needed.

The analysis may be rerun after several years to validate the new FDRA boundaries, the RAWS stations and the use of ERC to represent fire danger.

Appendix A—Glossary

Adjective Rating	A public information description of the relative severity of the current fire danger situation.
Burning Index	A number related to the contribution of fire behavior to the effort of containing a fire. The BI (difficulty of control) is derived from a combination of spread component (how fast it will spread) and energy release component (how much energy will be produced). It is an index that rates fire danger related to potential flame length over a fire danger rating area.
Climatological Breakpoints	Points on the cumulative distribution of one fire weather/fire danger index without regard to associated fire occurrence/business. They are sometimes referred to as exceedance thresholds.
Dryness Level	A variable for fuel moisture which is a combination of ERC and 100-hour fuel moisture correlating to large fire occurrence.
Energy Release Component	A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. The energy release component is derived from predictions of the rate of heat release per unit area during flaming combustion and the duration of flaming, which are functions of fuel model, dead fuel moistures, and live fuel moisture.
Equilibrium Moisture Content	The moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity. When a fuel particle has reached its equilibrium moisture content, the net exchange of moisture between it and its environment is zero.
Fire Business Thresholds	Values of one or more fire weather/fire danger indexes that have been statistically related to occurrence of fires (fire business). Generally, the threshold is a value or range of values where historical fire activity has significantly increased or decreased.
Fire Danger	The resultant descriptor of the combination of both constant and variable factors that affect the ignition, spread, and control difficulty of control of wildfires on an area.
Fire Danger Continuum	The range of possible values for a fire danger index or component, given a set of NFDRS parameters and inputs.
Fire Danger Rating	A system that integrates the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an areas protection needs.
Fire Danger Rating Area	A geographic area relatively homogeneous in climate, fuels and topography, tens of thousands of acres in size, within which the fire danger can be assumed to be uniform. Its size and shape is primarily based on influences of fire danger, not political boundaries. It is the basic, on the ground unit for which unique fire danger decisions are made based on fire danger ratings. Weather is represented by one or more NFDRS weather (RAWS) stations.
Fire Weather Forecast Zone	A grouping of fire weather forecast stations that experience the same weather change or trend. Zones are developed by the National Weather Service to assist NWS production of fire weather forecasts or trends for similar stations. Fire weather forecast zones are best thought of as a list of similar weather stations, rather than an area on a map.

Fuel Model	A simulated fuel complex for which all fuel descriptions required by the mathematical fire spread model have been supplied.
Ignition Component	The probability of a firebrand producing a fire that will require suppression action.
R squared test	R squared is a statistical measure of how close the data is to a fitted regression line. The closer the value is to 1, the better the fit.
Spread Component	A rating of the forward rate of spread of a head fire. Key inputs into the calculation include wind speed, slope, and fine fuel moistures.
Staffing Level	The basis for decision support for daily staffing of initial attack resources and other activities; a level of readiness and an indicator of daily preparedness.
Time lag Class	The time necessary for a fuel particle to lose approximately 63% of the difference between its initial moisture content and its equilibrium moisture content.
Timelag Fuel Moisture Content	The dead fuel moisture content corresponding to the various time lag fuel classes: 1-hr = < ¼" ; 10-hr = ¼ - 1" ; 100-hr = 1-3" ; 1000-hr = 3-8"

Appendix B—Acronyms & Abbreviations

AFMO	Assistant Fire Management Officer
BI	Burning Index
BLM	Bureau of Land Management
CDC	Coeur d'Alene Interagency Dispatch Center
CDT	Coeur d'Alene Tribe
CWF	Clearwater National Forest
DL	Dryness Level
ERC	Energy Release Component
FAMWEB	Fire & Aviation Management Web Applications
FDRA	Fire Danger Rating Area
FDOP	Fire Danger Operating Plan
FMO	Forest Management Officer
FPD	Forest Protective District
FTS	Forest Technology Systems
GA	Geographic Area (Ranger District)
IA	Initial Attack
IDL	Idaho Department of Lands
IPF/IPNF	Idaho Panhandle National Forests
KBDI	Keetch-Byrum Drought Index
KCFAST	Kansas City Fire Access Software
NESDIS	National Environmental Satellite Data Information Service
NF	National Forest
NFDRS	National Fire Danger Rating System
NIFMID	National Interagency Fire Management Integrated Database
NOAA	National Oceanic & Atmospheric Administration
NWCG	National Wildfire Coordinating Group
NWS	National Weather Service
OHV	Off-Highway Vehicle
PL	Preparedness Level
RAWS	Remote Automated Weather Station
RD	Ranger District
NDVI	Normalized Difference Vegetation Index
SIG	Special Interest Group
USFS	United States Forest Service
WIMS	Weather Information Management System

WFAS

Wildland Fire Assessment System

Appendix C—Fire Occurrence-Statistical Cause and Fire Size Class

Statistical Cause

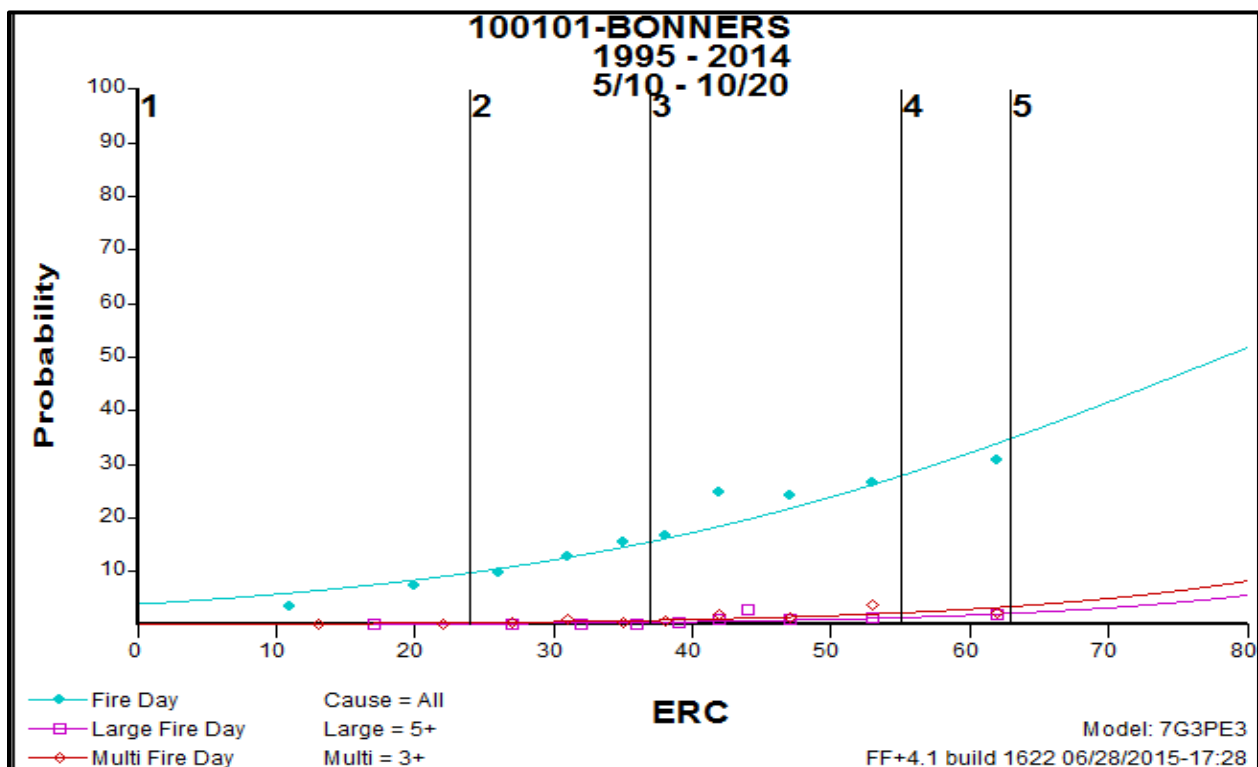
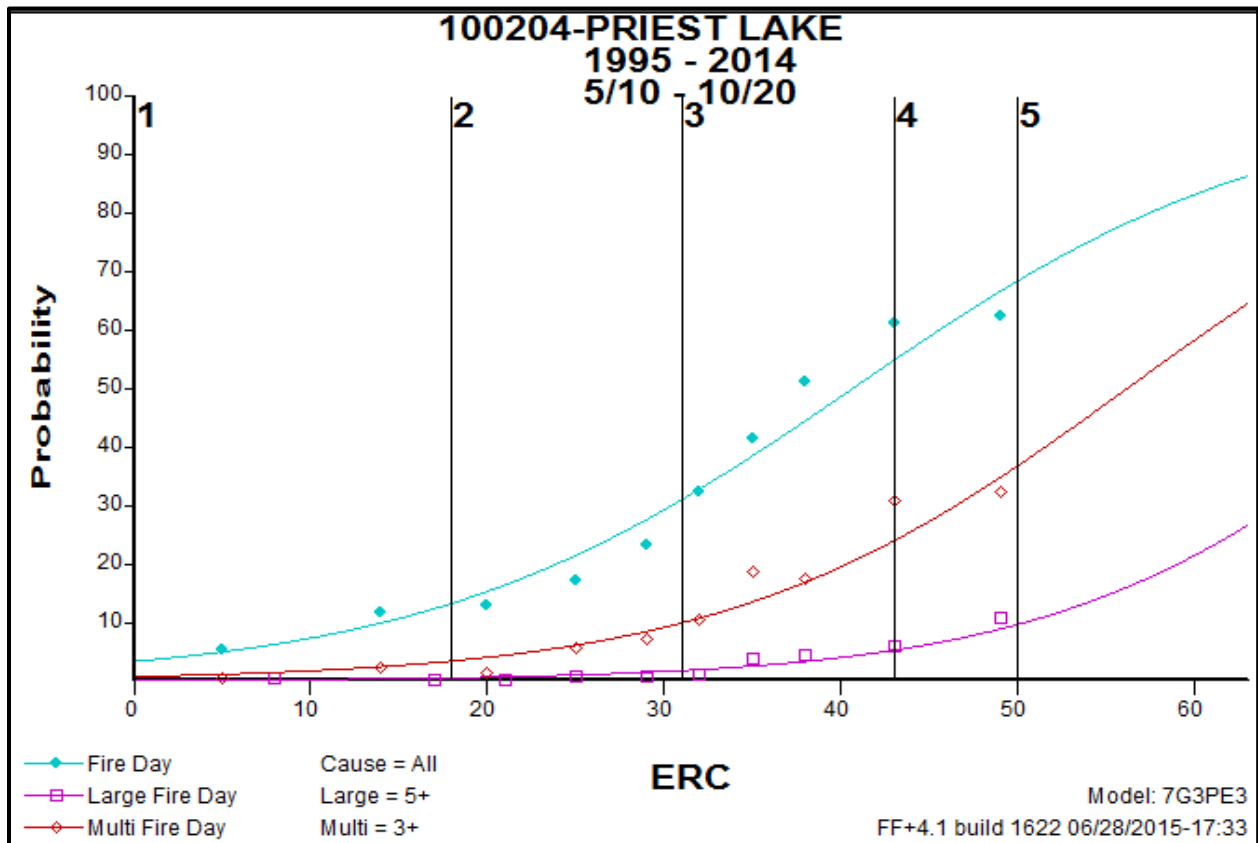
For the purpose of the FireFamilyPlus Analysis IDL data was converted to the federal system of statistical cause classification.

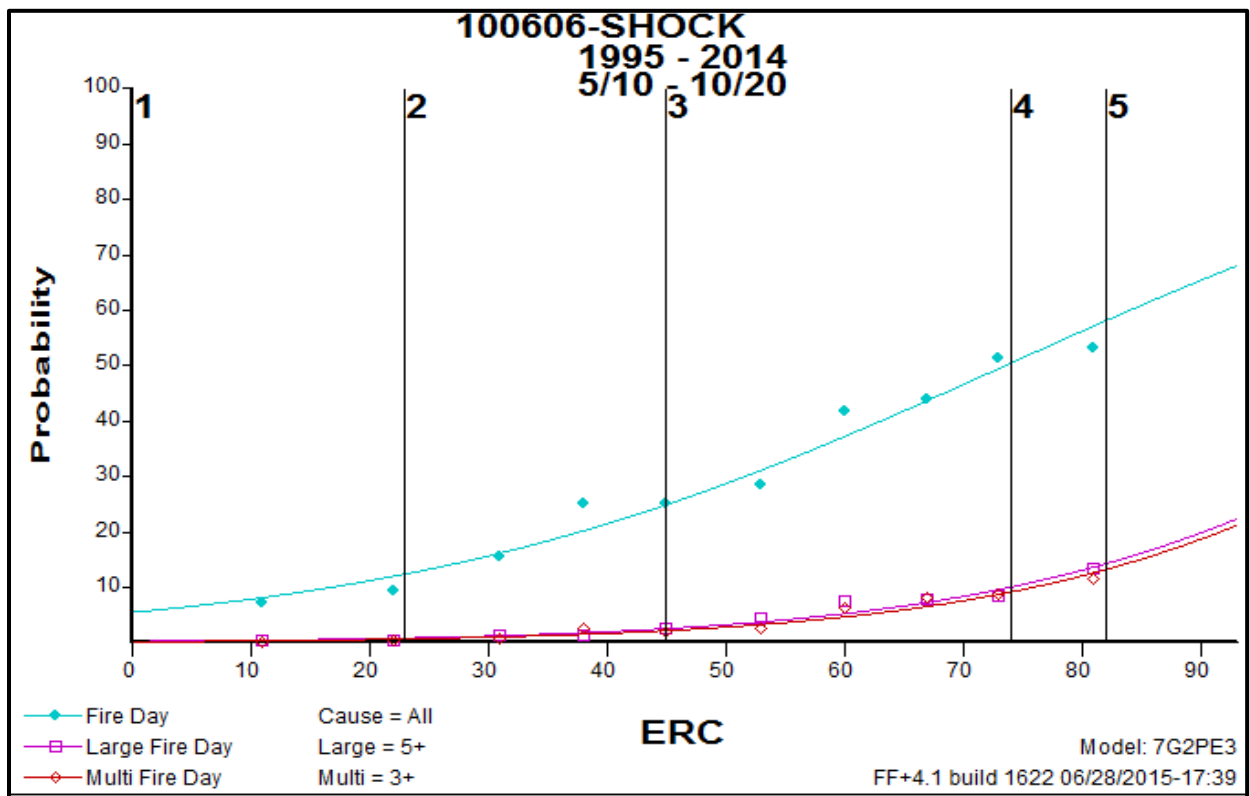
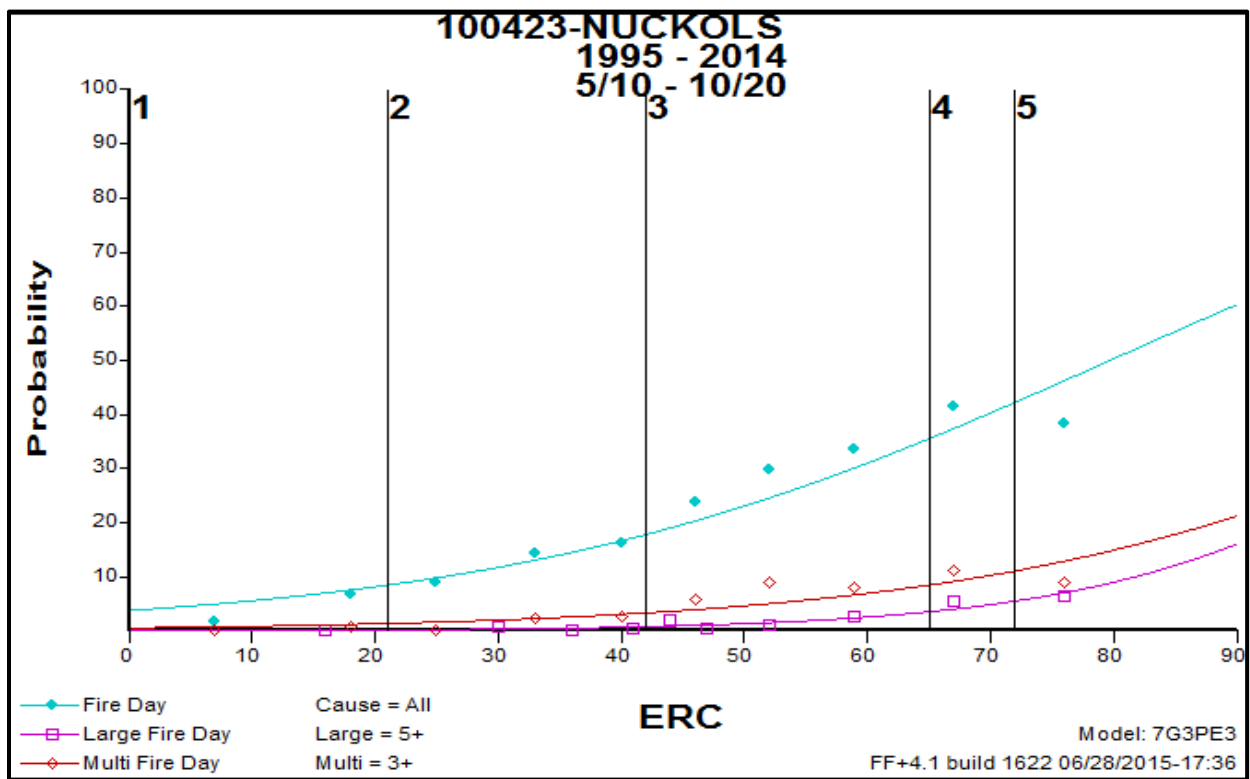
Forest Service	ID Dept. of Lands
1—Lightning	1—Lightning
2—Equipment Use	2—Campfire
3—Smoking	3—Smoking
4—Campfire	4—Debris Burning
5—Debris Burning	5—Arson
6—Railroad	6—Equipment Use
7—Arson	7—Railroad
8—Children	8—Children
9—Miscellaneous	9—Miscellaneous

Fire Size Class

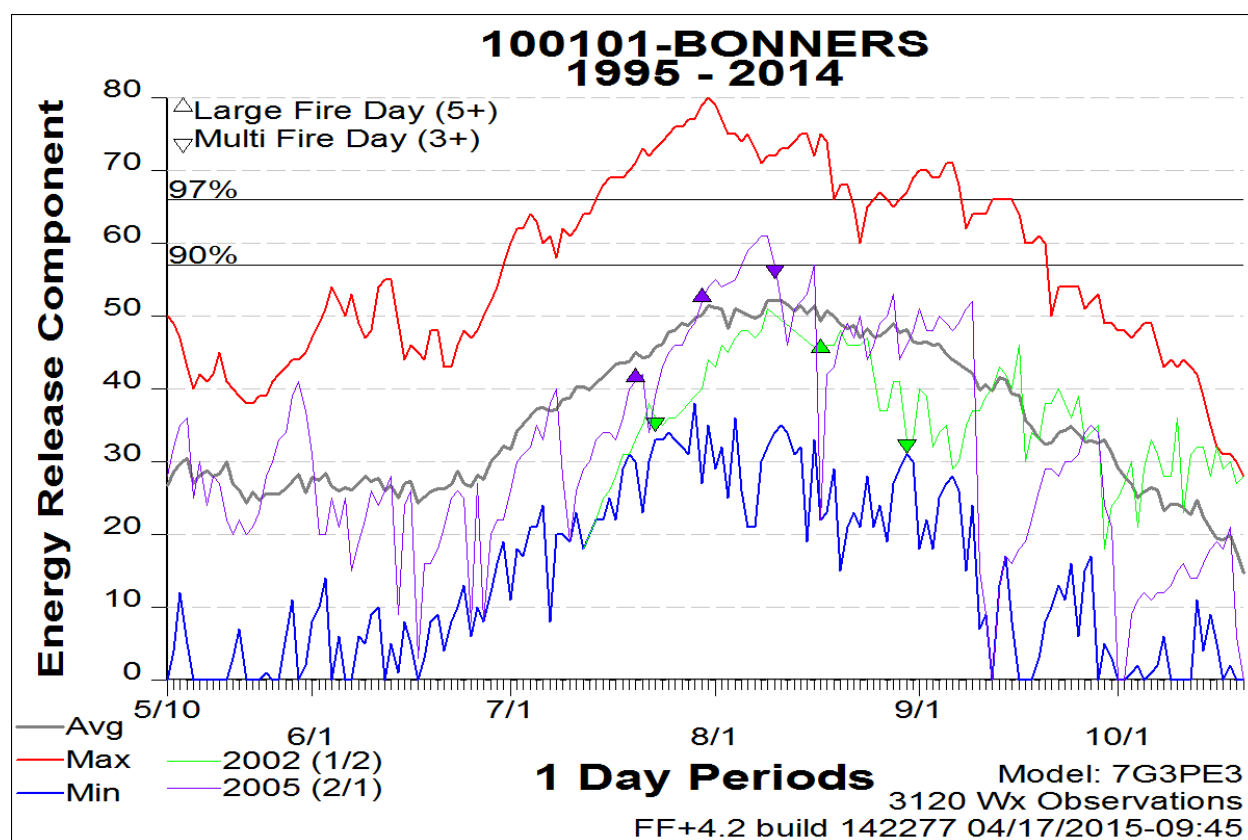
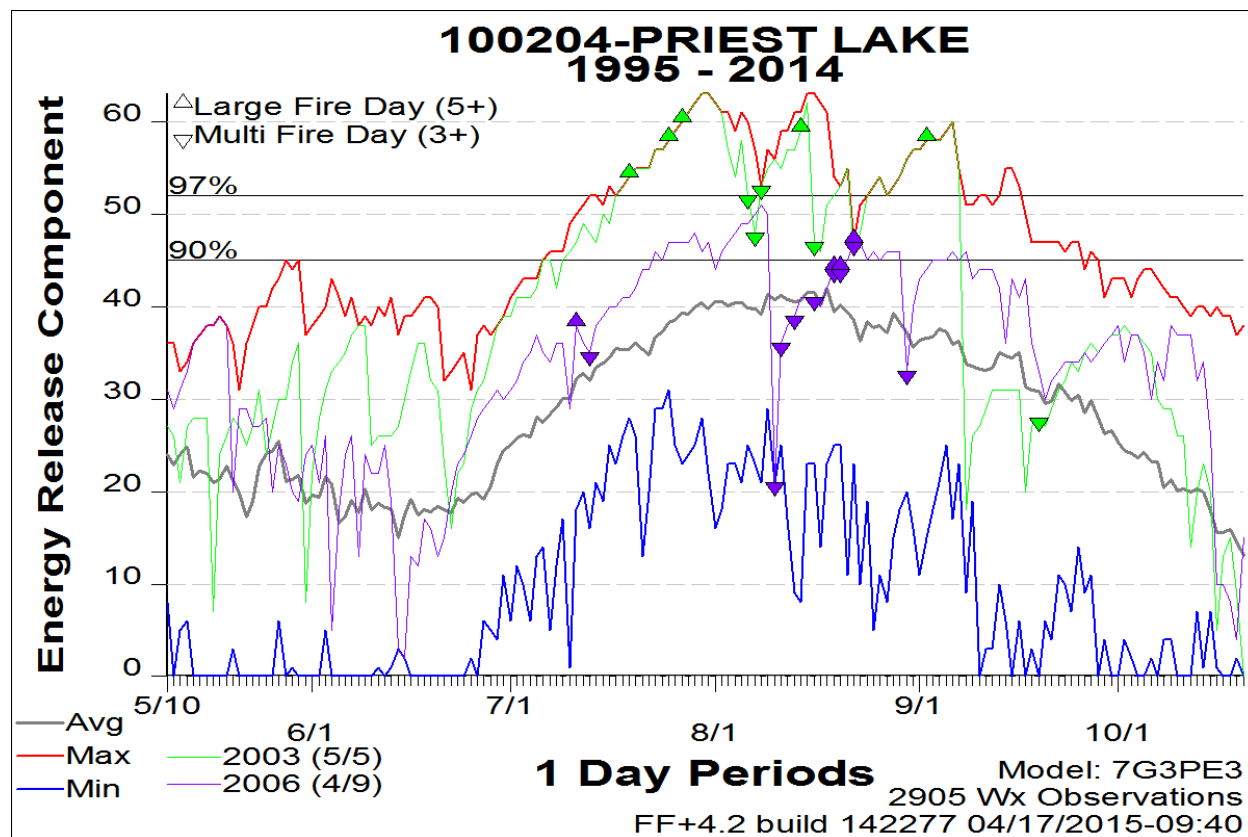
A = 0—.25 acres
B = .26—9.9 acres
C = 10—99 acres
D = 100—299 acres
E = 300—999 acres
F = 1,000—4,999 acres
G = 5,000 acres-9,999 acres
Larger size classes exist

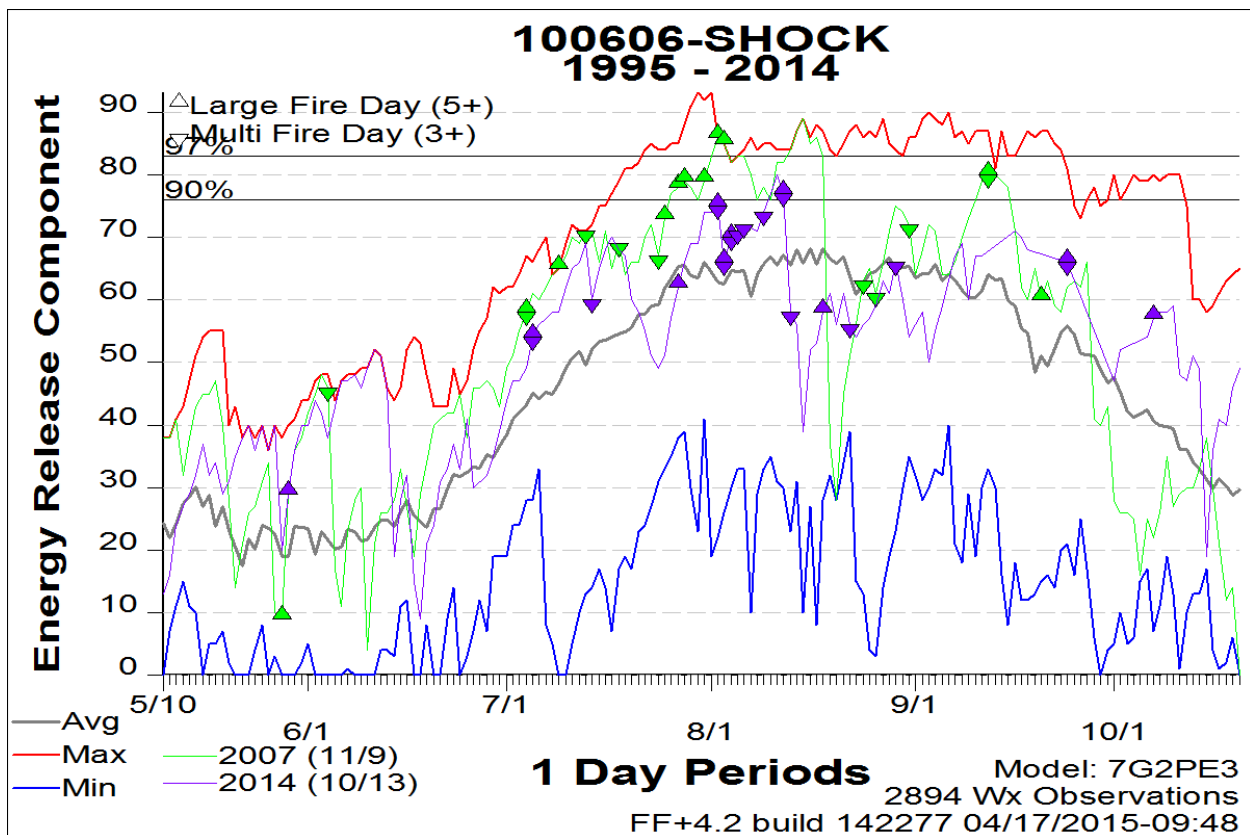
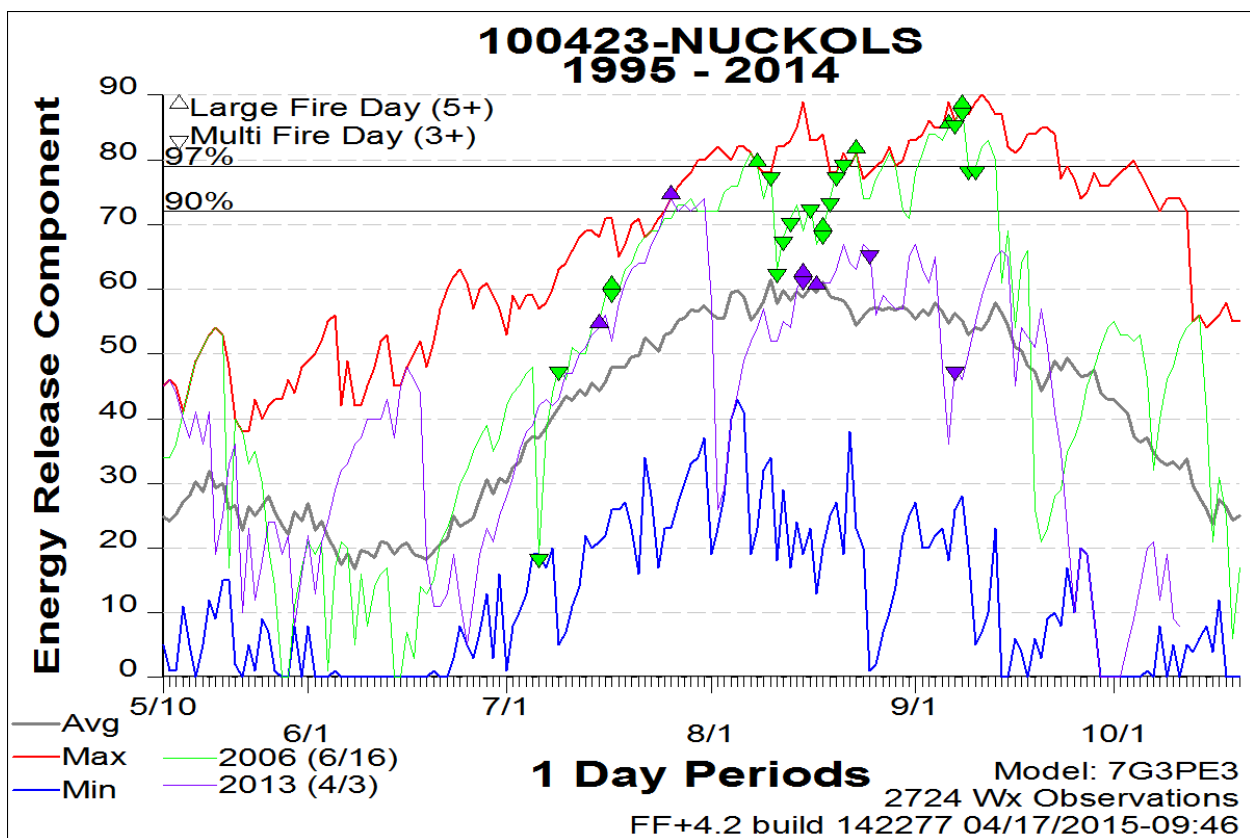
Appendix D—Preparedness Level Decision Points





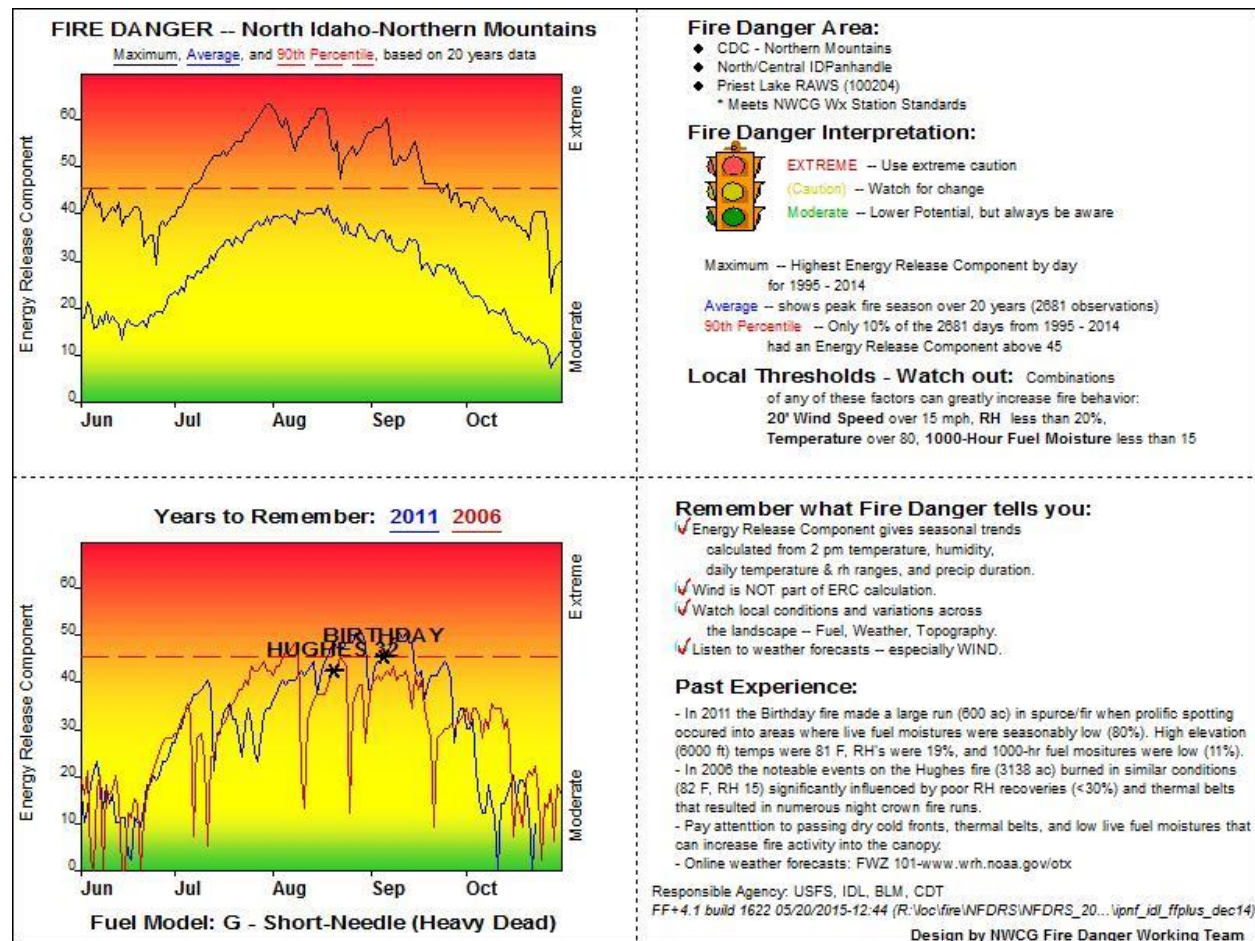
Appendix E—Climatological Statistics Graphs



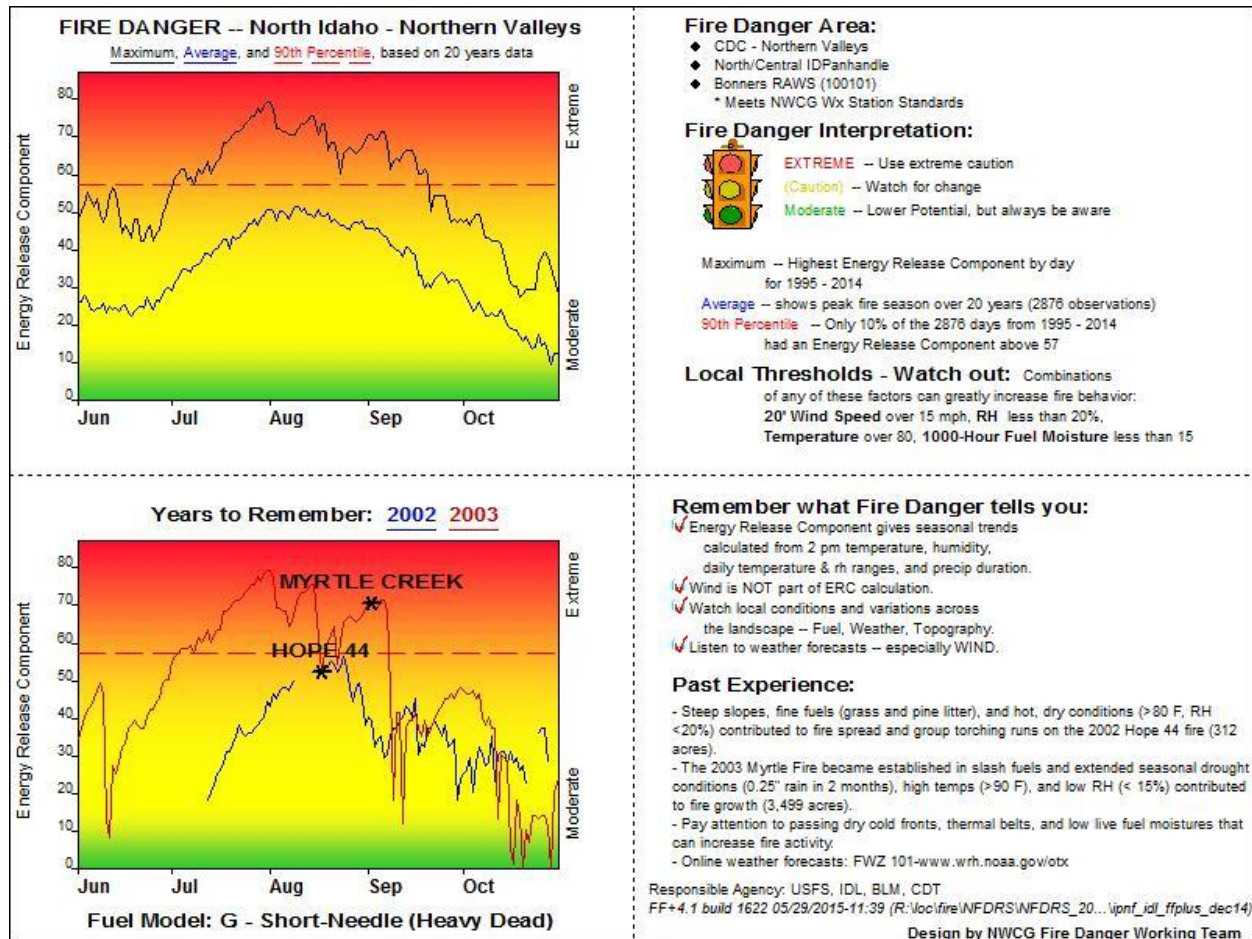


Appendix F—Fire Danger Pocket Cards

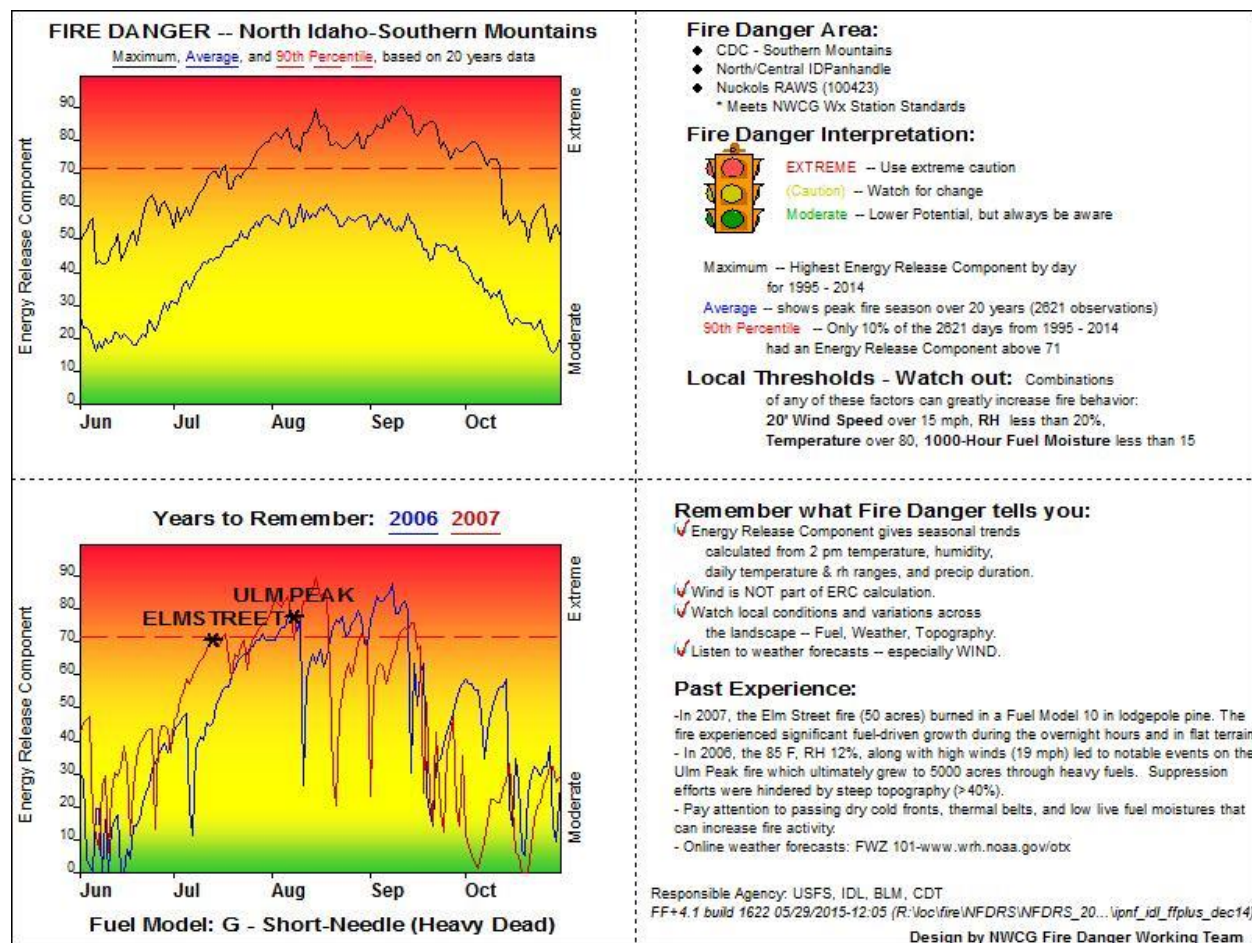
Northern Mountains Fire Danger Pocket Card



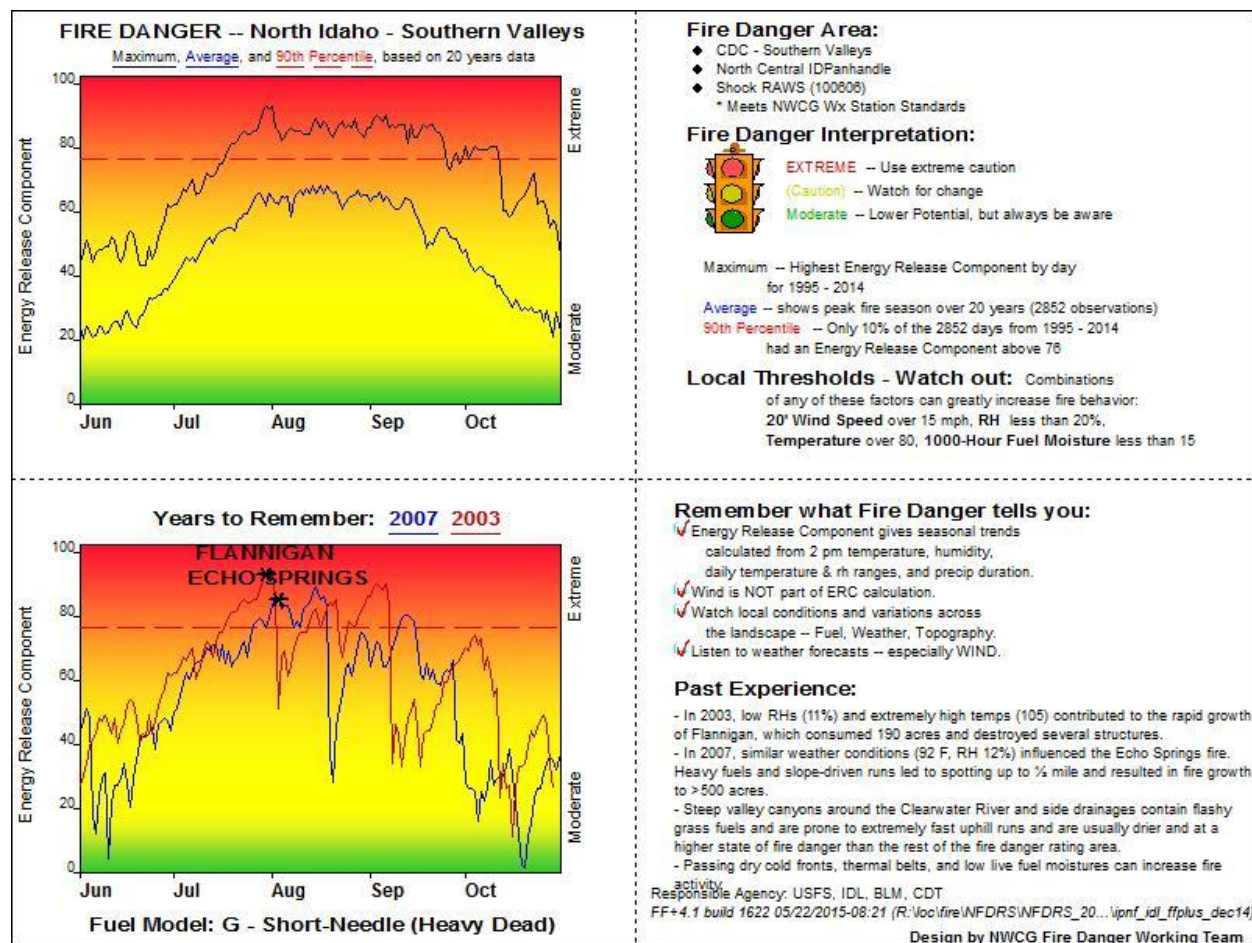
Northern Valleys Fire Danger Pocket Card



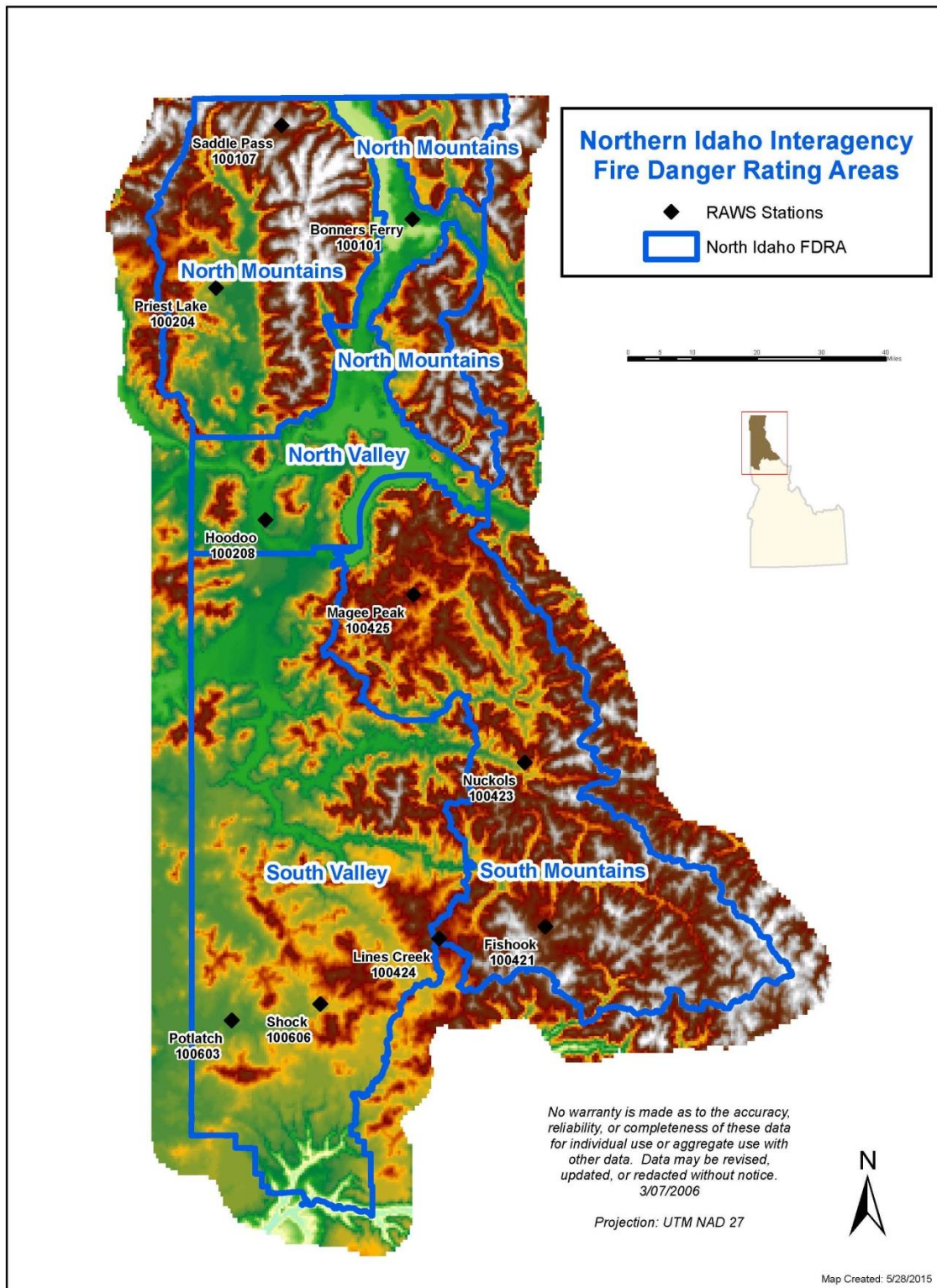
Southern Mountains Fire Danger Pocket Card



Southern Valleys Fire Danger Pocket Card

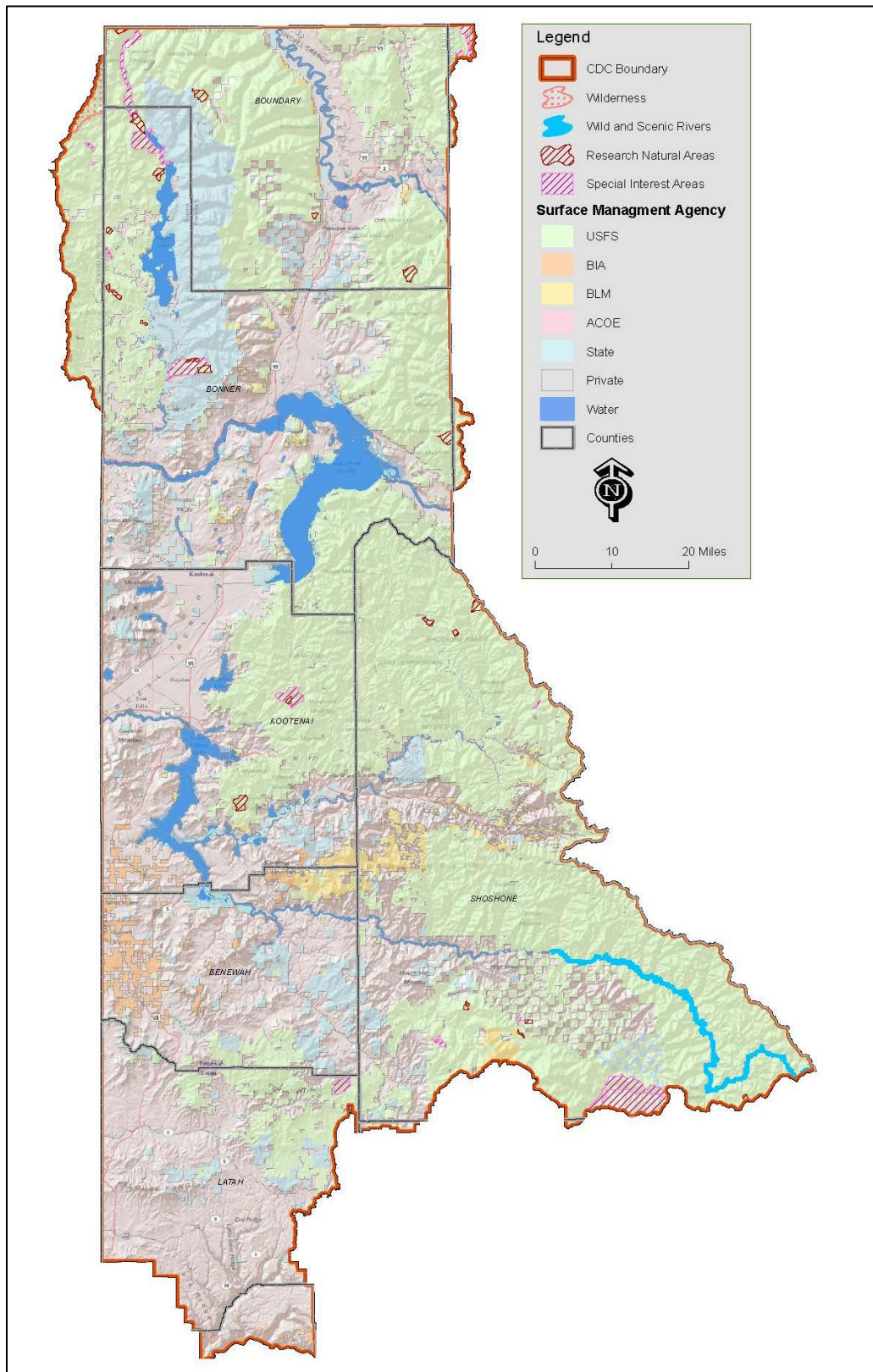


Northern Idaho Fire Danger Rating Areas

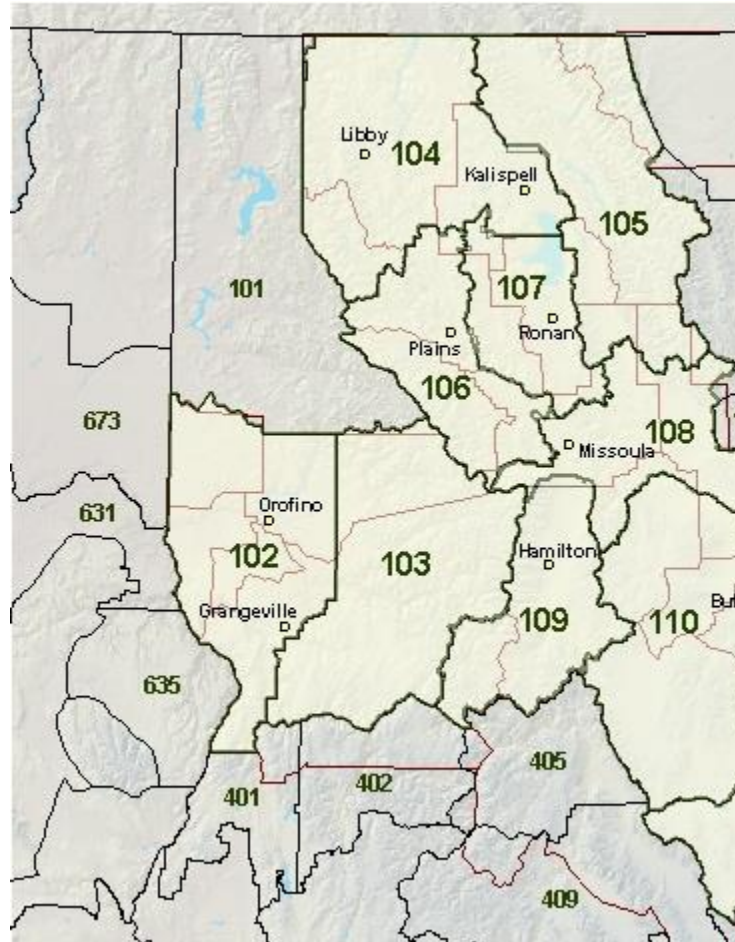


Appendix G—Maps

Jurisdictions



Fire Weather Forecast Zones



Forecast Zone Descriptions

ZONE 101: NORTHERN AND CENTRAL IDAHO PANHANDLE DISTRICT

This District is part of Region 1 and has one zone – Northern and Central Idaho Panhandle Zone 101. This zone includes the Idaho Panhandle National Forests, Coeur d'Alene Tribe Agency lands, and Idaho State protected lands in the following counties: Boundary, Bonner, Kootenai, Benewah, Shoshone, and the northern part of Latah County, where a part of the St. Joe District resides. Zone 101 is broken into three separate zones: the Northern zone, Central zone, and Southern zones.

ZONE 102: PALOUSE/NEZ PERCE RESERVATION/HELL'S CANYON REGION

The northern boundary follows the southern portion of the Coeur d'Alene Indian Reservation and the Latah/Clearwater County lines. The eastern boundary originates at the intersection of the Little North Fork of the Clearwater (near the Clearwater County line) and the Clearwater/Nez Perce National Forest boundary and runs south along the Forest boundary past Grangeville to the main Salmon River at Island Bar and continues south and west along the Idaho County border. The western boundary runs along the Snake River from the Coeur d'Alene Reservation to the Adams County line.

North Idaho Land Cover

